Bell Telephone MAGAZINE

"We Must Continue to Go Forward" • LEROY A. WILSON

Public Telephones: They Serve Everybody • T. HUNT CLARK

Making Inter-Office Trunk Equipment Do Double Duty
BENJAMIN K. BOYCE

Business and People • KEITH S. MCHUGH

Washington's New Federal Dial Switching System
GEORGE E. DESJARDINS

The Single Warrant: A Step Ahead in Corporate Finance
FREDERICK A. WISEMAN

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A Medium of Suggestion & a Record of Progress

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Leroy A. Wilson, *President;* Carroll O. Bickelhaupt, *Sec.;* Donald R. Belcher, *Treas.*

Who's Who & What's What

in This Issue

THE STATEMENT WHICH LEROY A. WILSON made at the annual meeting of stockholders of the A. T. & T. Company on April 21 is his first formal public utterance since he was elected to the presidency of the company two months earlier.

Mr. Wilson's election as president climaxed a Bell System career which had begun 26 years before with the Indiana Bell Telephone Company when, two days after graduation from Rose Polytechnic Institute in Terre Haute, in June of 1922, he reported for work as a traffic clerk and student in Indianapolis. During his years with that company he had direct charge of the telephone operating forces in several districts throughout the state before returning to Indianapolis as district traffic superintendent in 1927.

It was in 1929 that Mr. Wilson transferred to the Department of Operation and Engineering of the A. T. & T. Company in New York. His first work there was in the traffic division, but he also gained experience in dial equipment engineering and in related fields. Ten years after his arrival in New York, he moved from the traffic to the commercial division of O. & E., where he was placed in charge of the work on telephone directories. The following year he was made rate engineer in the same division, and in 1942 he was appointed to head the entire commercial division.

It was from this post that Mr. Wilson was promoted to an A. T. & T. vice presidency in 1944, with the assignment to study the revenue requirements of the Bell System. His "Reasonable Earnings to Insure the Best Service," published in this MAGAZINE for Autumn 1945, expounds his philosophy on the subject and directly promotes an understanding of it.

IT IS a coincidence that T. HUNT CLARK's "Public Telephones: They Serve Everybody" appears in this issue, since his only previous contribution, "That First Call

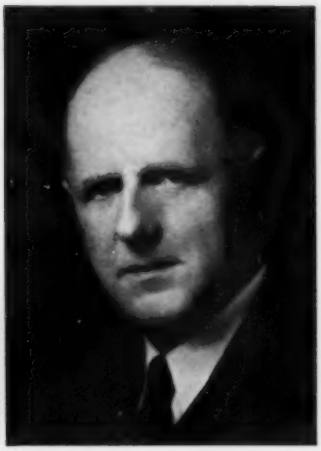
T. Hunt Clark

Benjamin K. Boyce

Keith S. McHugh

Hubert A. Pattison

George E. DesJardins



Frederick A. Wiseman

Home," was published in the MAGAZINE for Autumn 1945, which carried Mr. Wilson's only previous contribution.

An officer in two wars, Mr. Clark spent the years between them in the commercial engineering division of the New York Telephone Company; as secretary to Walter S. Gifford, then president of the A. T. & T. Co. and since February 18 of this year chairman of the board; and in the sales and servicing section of the commercial division of the O. & E. Department of A. T. & T. After discharge in 1945—with the rank of Major—from his duties as Chief of the Control and Communications Section of the National Office of Civilian Defense in Washington, he rejoined the sales and servicing section, where his field has included public telephone service.

THE REPORT of the past year's progress in carrying forward the Bell System's program of rural telephone development is one of an annual series prepared by the commercial division of the A. T. & T. Company's Department of Operation and Engineering. It is published in these pages as supplementing "More and Better Telephone Service for Farmers," in our issue for Winter 1944–45, and "Progress in Extending Bell Rural Telephone Service," in our issue for Winter 1946–47.

MAKING two telephone circuits grow where but one had grown before is an accomplishment which BENJAMIN K. BOYCE has opportunity to achieve—thanks to the peculiar geography of Manhattan Island and the fixed telephone habits of large numbers of customers of the New York Telephone Company.

Mr. Boyce joined the Engineering Department of the New York Telephone Company in 1907, and served in various engineering capacities before becoming toll and exchange plant engineer in 1921. Five years later he became chief engineer of the Upstate Area of that company, with his headquarters in Albany, and in 1939 he was appointed to a like post in the Manhattan Area. After another two years he became vice president and general manager of the Bronx-Westchester Area, and since 1942 he has been Chief Engineer, Manhattan-Bronx-Westchester, New York Telephone Company.

A STATEMENT of the Bell System career of KEITH S. MCHUGH will be found in the MAGAZINE for Autumn 1947, in which was published his "How Big Are the Little Things in the Telephone Business?"

JOINING the Bell System in 1918, HUBERT A. PATTISON was with the Patent Department of Western Electric Company for 26 years. He was in charge of the work at Kearny from 1922 to 1925, and then until

(*Continued on page 19*)

LEROY A. WILSON

PRESIDENT, AMERICAN TELEPHONE AND TELEGRAPH COMPANY

The New Head of the American Telephone and Telegraph Company Greets the Stockholders at the Annual Meeting In New York on April 21

"We Must Continue To Go Forward"

Leroy A. Wilson

TWO MONTHS AGO your directors elected a new President of the company. I am deeply aware of the responsibilities that have been entrusted to me. I take heart from the conviction that Bell System policies and the high standards of performance achieved over the years give us the best kind of foundation for meeting the problems and opportunities of the future.

It is a privilege to join with you today in paying tribute to the man who during 23 of his nearly 44 years of Bell System service has headed this company. Through successive periods of boom, depression, and war, and through these post-war years, Mr. Gifford has kept our public-service enterprise on a true course. He has done so with untiring patience and steady courage, with consideration for the interests of everyone associated with the business—whether as customer, stockholder, or employee—and with a personal graciousness that endears him to all who know him.

Many minds and many hands have shared in making our service everywhere more extensive, more useful, and more valuable to more people. They have had, in Mr. Gifford, the leader who with wisdom, foresight, and rare judgment has made their teamwork increasingly effective. That he is now serving as Chairman of the Board and is continuing to participate actively in the business is a great comfort to me, and I am sure is heartily welcomed by the stockholders.

THE ANNUAL REPORT, which was sent to all stockholders in February, presented in detail the management's accounting of its stewardship for the year 1947, and the statement which accompanied dividend checks of April 15, less than a week ago, gave the latest financial results of Bell System operations.

Since V-J day the System has had under way the largest construction program in its history, in order to provide new buildings, central office

apparatus, telephone lines, and other equipment needed to meet the unprecedented demand for service and to make the service better. More than seven million telephones have been added. Demand for service continues at a high level, and to meet it we must keep on with our heavy construction program, which will require large additional amounts of new capital.

Nearly two billions of new capital have been raised in the last 24 months. The greater part has been obtained from long-term debt issues. Some $785,000,000 has come from the sale of convertible debentures and the conversion of debentures into A. T. & T. stock. The number of stockholders has reached a record total of 737,000, an increase of 14,000 since the beginning of this year. We heartily welcome those who are acquiring shares in the ownership of our expanding business.

The proportion of debt in the total capital of the System is now about 50 percent; approximately one-fifth of this is in the form of debentures convertible into stock. Each debenture converted reduces the proportion of debt, and with earnings adequate to attract additional conversions we can in due course look forward to a lowering of the current debt ratio. We must obtain the additional capital needed to provide the service that our customers want, and at the same time maintain a sound financial structure, which is the only basis for good service, good wages, and protection of the savings invested in the business. This means that earnings must continue to provide a return on the stockholders' investment sufficient to permit the majority of financing through issues of stock or debentures that are later converted into stock. Your management is taking every means to accomplish this, and I am confident that we shall be successful in the future as in the past.

MORE THAN 20 years ago, speaking before the 1927 Convention of the National Association of Railroad and Utilities Commissioners in Dallas, Texas, Mr. Gifford stated the fundamental policy of the Bell System. It was obvious, he said, that the only sound policy that will meet the System's obligations "is to continue to furnish the best possible service at the lowest cost consistent with financial safety. This policy is bound to succeed in the long run and there is no justification for acting otherwise than for the long run."

The Bell System has been successful because it has lived by this policy and lived up to it. A few illustrations from the record will help to show this. They are the best evidence too that the same policy will guide us well in the future.

Today we are able to provide a great deal more service to more people than 20 or 25 years ago. The number of Bell telephones has increased nearly three times. The volume of calls has increased from about 18 billion a year to more than 50 billion. Service is faster, the quality of transmission better, and errors less frequent.

The plant is more sturdy and the service most dependable. The range of service has been vastly extended, not only to bring the convenience of the telephone to the more remote areas of our own country but also to reach countries all over the world

and to serve ships, automobiles, trains, and aircraft. Teletypewriter exchange service has been extended to customers in all parts of the country.

New types of facilities are being introduced, including coaxial cables and radio relay systems which are carrying television programs as well as telephone conversations. New switching systems are going into the plant that will in time further speed up toll and long distance service by enabling operators to dial calls directly from coast to coast and by enabling customers to dial many of their own toll calls to points beyond their local exchange area. New telephone instruments and teletypewriter equipments are under development which will further increase the convenience and ease of communication.

WE ARE keenly aware that the problems caused by the war and the unprecedented demands of the post-war period have made it impossible to give service to all who want it and to give every customer the kind of service he wants. Yet, though the service today is not in every respect what we would like to have it and intend to make it, it is beyond all comparison better than it was 20 or 25 years ago.

Not only is the service better but its value to the user is far greater than ever before. For example, a telephone user today on the average can reach three times as many telephones in his local exchange area as he could 25 years ago. Another evidence of the increase in value is the tremendous increase in demand. The fact is that generally the price of telephone service to the user is today relatively much less than it used to be. Because of the steep rise in the cost of providing service since the war, Bell System companies have recently had to request increases in telephone rates, and additional increases are necessary. However, may I point out again that the increases that have been made effective in the last year or two are the first important ones since the period of price adjustment following World War I, and that they have been much less than the rise in prices generally.

Under the policy stated in 1927, then, the quantity of service, the quality of service, and the value of service have all increased. The policy also pointed out that "Payments to stockholders limited to reasonable regular dividends with their right, as the business requires new money from time to time, to make further investments on favorable terms, are to the interest both of the telephone users and the stockholders."

Reasonable and regular dividends have been paid to stockholders through the speculative 1920s, through the depression years of the '30s, and through the war-time and post-war '40s. As new money has been required, stockholders have had the right from time to time to invest further in the company. The financial integrity of the business has been maintained. Your management is keenly aware that this is essential to the progress of the business, to the improvement and expansion of the service, and to make possible the fullest measure of opportunity to employees.

In the same way, our policy recognizes that it is to the advantage of customers and stockholders that the

employees of the Bell System be well paid, that they carry on their work under good working conditions, and that individual abilities be discovered and developed, with promotions made from the ranks. The joint enterprise of investors who are paid a reasonable return and employees who are paid good wages is to the advantage of both groups, and also to the advantage of telephone users, who thereby obtain steadily better and more valuable service.

Over the years public regulatory authorities have generally recognized this. From the record of the past there is every reason to believe that on the whole they will continue to do so and that they will approve whatever increases in telephone rates may be necessary to keep the telephone companies financially sound and in a position to continue their progress in increasing the value of the service. A financially healthy telephone company is an asset to community, state, and nation; financial ill health could only produce in the long run the most costly of service to the user.

As Mr. Gifford observed in the policy statement of 1927, to which I have already referred, "The margin of safety in earnings is only a small percentage of the rate charged for service, but that we may carry out our ideals and aims it is essential that this margin be kept adequate. Cutting it too close can only result in the long run in deterioration of service while the temporary financial benefit to the telephone user would be practically negligible."

The common sense of this statement is as obvious today as it was then. A sound and prospering organization is the only kind of organization that can continue to make progress in the public interest. We cannot rest on the record of the past, but under the policy which has been so successful in the past we must continue to go forward. That service be further expanded and improved; that the cost to the user continue to be as low as possible; that employees find good pay, opportunity, and satisfaction in their telephone careers; that stockholders receive a reasonable and regular return and that their savings invested in the business be protected—in meeting these objectives lies the task of your management; a task that is accepted with confidence, with whole-hearted enthusiasm, and with the determination that the people of our nation shall continue to enjoy the most, the cheapest, and the best telephone service in the world.

A Three-fold Program of Improvement, Instituted since The War, Promises Better Service for Customers and a Consequent Gain in Revenue for the Bell System

Public Telephones: They Serve Everybody

T. Hunt Clark

ONE of the first big post-war sales and servicing jobs to get under way in the Bell System's Associated Companies, and one which is already showing important results, is aimed at improving public telephone service *—and thus public telephone revenues. Important as public telephone service is at present—it handled more than *two billion calls* last year—the companies are moving aggressively ahead on a plan to make it still more so.

Three outstanding factors have made this one of the lead-off post-war sales projects:

1. It is a job on which a good deal can be done with only minor demands on the already overloaded outside telephone plant and central office facilities.

2. It is needed to insure the adequacy of the service on which the entire public depends so much, not only in emergencies but for business and all sorts of other occasions as well. It is particularly important at this time because of the number of people who have been unable as yet to obtain telephone service of their own.

3. It offers attractive opportunities for increasing revenues substantially.

The public telephone promotion forces of the Associated Companies are pushing forward on three primary fronts:

A. Improving service and revenues at existing public telephones by improving the convenience, comfort and attractiveness of the service.

B. Relieving congestion and improving revenues by providing additional public telephones.

* This article refers only to public telephones; i.e., coin and attended telephones which are provided for the use of the general public. Not included in the discussion are the semi-public telephones provided primarily for the subscriber, with public use more or less incidental.

The size and importance of public telephone service is indicated by the fact that in 1947 the more than two billion calls made at public telephones produced some $150,000,000 in gross revenue.

While public telephones comprise only 1.5 percent of the System's main telephones, they contribute 7 percent of the total billing.

And every call is an opportunity to create better public relations.

C. Encouraging the general public to place calls at public telephones rather than to use the private telephones of subscribers in stores and other business places.

Proof of the Pudding

WHAT can a well integrated, aggressive public telephone promotion program such as this really accomplish?

Perhaps the easiest way to visualize it, and to prove it, is to see its results in a medium sized city—one of the many where this work is under way. Let's look at what happened in Winston-Salem, N. C., recently.

The Winston-Salem exchange area has a population of 119,000; and last summer, when the public telephone promotion man came into town to start work, it had 300 coin telephones in service. The representative visited all these locations, and carried out such a program.

He saw to it that locations, and directory, lighting, and ventilating facilities, were improved where needed.

He arranged for refinishing any booths in poor condition, and enlisted the coöperation of the public telephone agents—the owners or lessees of the premises where the telephones are located—in providing adequate day-to-day janitor service.

Fourteen businessmen were persuaded that public telephone calls had no place on their business lines.

In all, he found ways to improve 124 installations, and he found good spots for 43 more coin telephones.

So attractive to the public were the service improvements he was able to achieve that, a few months after the job was done, revenue from the coin telephones was found to be running 50 percent ahead of the same period of the previous year. That contrasts sharply with the increase of only 0.7 percent in revenues from coin stations in the rest of the state of North Carolina during the same period.

Certainly this is proof of a mighty good pudding.

NOW LET'S LOOK a little more closely at the three aspects of this big promotion job.

IMPROVING SERVICE

Conditions at all existing installations are being thoroughly reviewed for opportunities for improving service to the public. Special attention is paid to low revenue producers.

Take the nickels, dimes, and quarters collected from public telephones last year—

Stack them up in one pile and you would have a monument over 3,000 miles high.

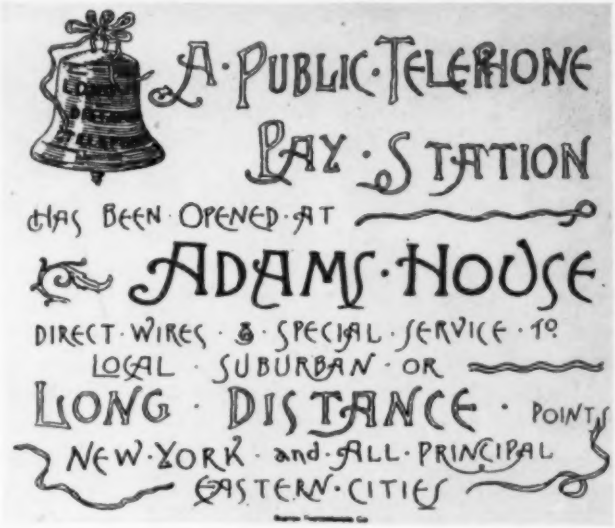
Lay them end to end and you would have a metal ribbon over 36,000 miles long.

Load them in boxcars and you would need a 300-car train over two miles in length.

For example, here are some of the measures being taken by the Associated Companies at such locations to improve—

Convenience: by moving the station to a more accessible location; or by providing shelves or tables for directories which are now hung from chains; by replacing directories with torn or missing leaves.

A bank of five booths in a store off the lobby of an office building was made more accessible by moving them out into the lobby. Result: an increased patronage which brought with it an 80 percent increase in revenue, or $3,400 more a year.



Installation of a public telephone was once a particularly noteworthy occasion

Comfort and Appeal: by better lighting, installing fans and seats, improving janitor service, and moving from excessively noisy locations.

A telephone near a juke box is not pleasant or easy to use, and the public will avoid it; whereas it can be a real public servant in another spot on the premises. The ceiling lights in booths are now being changed from 25-watt to 40-watt bulbs for better visibility when dialing, making notes during conversations, etc.

Privacy: by providing booths for public telephones which formerly were simply mounted on a wall.

Recently such an open telephone in a five and ten cent store was replaced by two telephones in booths. The greater privacy was appreciated—to the tune of a 200 percent increase in revenue—$1,200 more a year.

Prominence: by adding signs, or changing their type or location, to obtain greater coverage and visibility.

Illuminated signs are coming into greater use at appropriate locations. Moving the station to a more conspicuous location is also an effective means of making it more convenient—as was illustrated earlier. Brightly painted booths at selected locations are making their appearance around the country, giving public telephone locations a bright new look.

To carry out a job such as this, involving about 300,000 public telephones, requires a well planned, closely coördinated program of inspection, prescription, and corrective action. The principals concerned are the Commercial, Plant, and Engineering Departments and our friends the public telephone agents.

Work begins with a thorough inspection of each location by the Commercial public telephone promotion people. In addition, as a regular and continuing thing, the public telephone coin collectors make it a point to be on the look-out for and to report any conditions which may affect service adversely. They are in an excellent position, for example, to spot missing equipment, damaged parts, and unsightly conditions.

In the plans for increasing the attractiveness of service at existing public telephone locations, the agent plays a particularly important part. The telephone company looks to him to provide suitable space for the equipment, to keep the facilities clean, and to furnish current for booth and directory lights. Thus he shares with us the job of maintaining the installation in good condition.

For his part he is recompensed, generally by a commission on the receipts, so he has a stake in seeing to it that his public telephones are inviting to the public.

The Bell System pays the tidy sum of about $28,000,000 yearly to its public telephone agents.

To get the agent off to a fresh start, and to make sure that a good housekeeping job is done, some of the companies say, in effect, "Mr. Agent, this time we'll clean up the booth for you and then you'll see what a difference a little more 'spit and polish' makes to appearances —and, incidentally, to the size of your commission check at the end of the month." More often than not Mr. Agent is impressed by the results and this has a salutary effect on his caretaking activities in the future.

The Plant Department majors in the important job of scheduling and taking the necessary action to make such improvements as refinishing booths, relocating the facilities, adding signs, and so on.

This elaborate telephone booth of half a century ago had many of the important features of its modern counterpart

RELIEVING CONGESTION

Busy, congested locations are getting first attention, and new telephones are being added in localities where facility conditions permit. Close coördination with the central office equipment schedule is maintained, to make sure that this new installation work is intensified as additional central office equipment is installed.

In the meantime, the program provides for assuring that the best use is made of what we have. We want to be sure that existing public telephones are in locations where they do the most good.

Usually the amount of money collected from a public telephone is a good index of how well it is serving the public. So, if receipts from a low payer cannot be improved by the various corrective measures mentioned earlier, it is moved to a location where it will be more useful to the public.

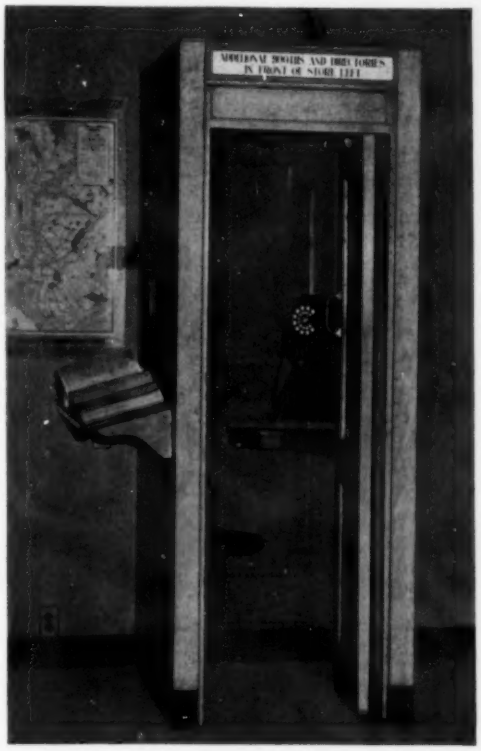
However, there are exceptions to this. Some public telephones are comparatively little used but are left where they are because many people in the locality have no other telephone to use in an emergency.

USE OF SUBSCRIBERS' SERVICE

The channeling of bona fide public telephone calls over coin telephone lines is another part of the public telephone promotion man's service improvement job.

In many instances, without realizing the disadvantages, a business subscriber permits his customers and the general public to use his business telephone for calls which public telephones are intended to handle.

He is unaware that this needlessly ties up his line and he may lose important calls.



An average modern public telephone installation: clean-cut, functional. Note particularly such points as the seat in the booth, directories on a well-lighted shelf and memo-sheet holder above them, and the sign at the top of the booth giving the location of other public telephones

He may find he has not collected for toll calls that were made.

If there are enough calls, he may be depriving himself of commissions on these calls if they were made over a public telephone on his premises.

The corrective action taken is to make sure that attractive, convenient coin telephone service is available nearby and to move the subscriber's service to a spot less accessible to the public.

In a Texas city, the public tele-

phone people worked with 19 large downtown businesses which were making their own business lines available to the general public. They included department stores, banks, theaters, etc. The businessmen were convinced by the telephone representatives that it would be to their advantage to discontinue this practice and to encourage the public to use the coin telephones. Sixteen public telephones were installed for public convenience and the business telephones were moved. Public telephone revenues at these locations are now $14,400 a year—and the businessmen are getting nice commissions.

Good Service Is the Aim

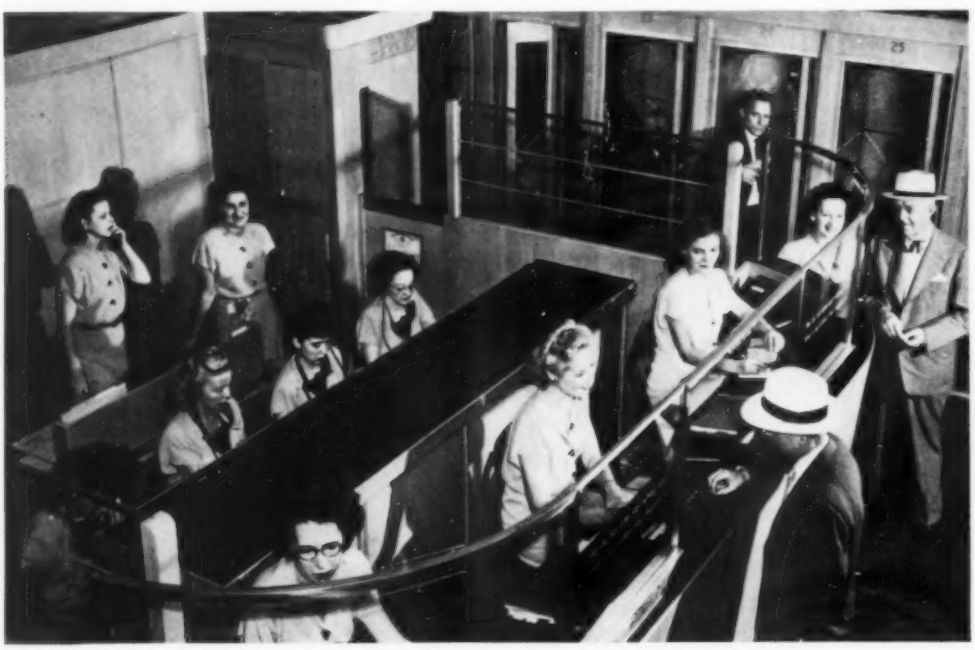
GOOD public telephone promotion pays off in more than nickels, dimes, and quarters.

The public relations stake in the job is also big. Big because each day millions of people all over the country who use these facilities are impressed favorably—or otherwise. The influence, good or bad, is cumulative, and therefore of great importance in molding public opinion of the telephone company. There is plenty of evidence of this.

That people do appreciate clean, well-equipped, conveniently located public telephones is being clearly evidenced in Winston-Salem and other places where this work has been under way.

Also from time to time there are the dramatic occasions when public telephones and public telephone people can render unusual and much valued service.

Take, for example, the recent com-

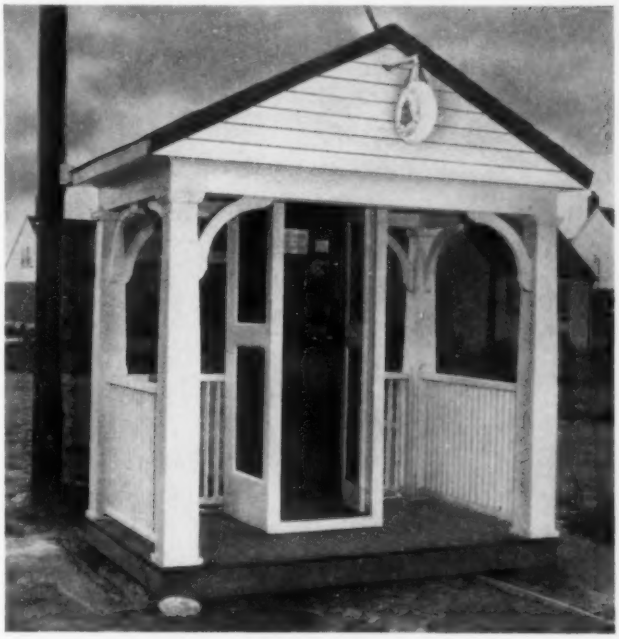


Modern design and architectural treatment make this attended public telephone center attractive

ment of a commuter who said "That job was worth four full pages of newspaper advertising in building good will."

This is what inspired his remark.

He was one of thousands who were marooned in a railroad station when the "big snow" hit the New York area right after Christmas and badly disrupted train and bus service. The situation at this station was particularly acute, and the public telephones in the station were jammed in the emergency.



An outdoor public telephone. When shortages of equipment have made it impossible to provide residence telephones, booths such as this have brought service to housing developments which otherwise would have been entirely without it

To do what they could to meet the urgent needs of the situation, the New York Telephone Company dispatched a number of special representatives to the location. Equipped with armbands reading "Telephone Company," they stationed themselves at the public telephones and rendered all kinds of special assistance. They made change, gave out long distance call information, and made additional directories available.

Because of the excessively heavy traffic, there were long dial-tone and circuit delays. Some users became impatient, and with others unfamiliar with dial coin telephone service did not wait for dial tone and lost their nickels. As well as they could, the representatives made refunds.

Several of the representatives, with the railroad company's assistance, set up shop in a ticket seller's booth and hung up a sign reading "New York Telephone Company Representative." A special line to the "A" board was installed, and when anyone was particularly overwrought and ran into delay in completing his call, the representative undertook to relay the message to the called number. This ticket window did a land office business and in a small way assumed the proportions of a general information bureau.

For the better part of a week, as long as the emergency lasted, these special emissaries of helpfulness and good will were on the job.

Special Services and Equipment

THIS AWARENESS of public needs and reaction shows itself in a variety of

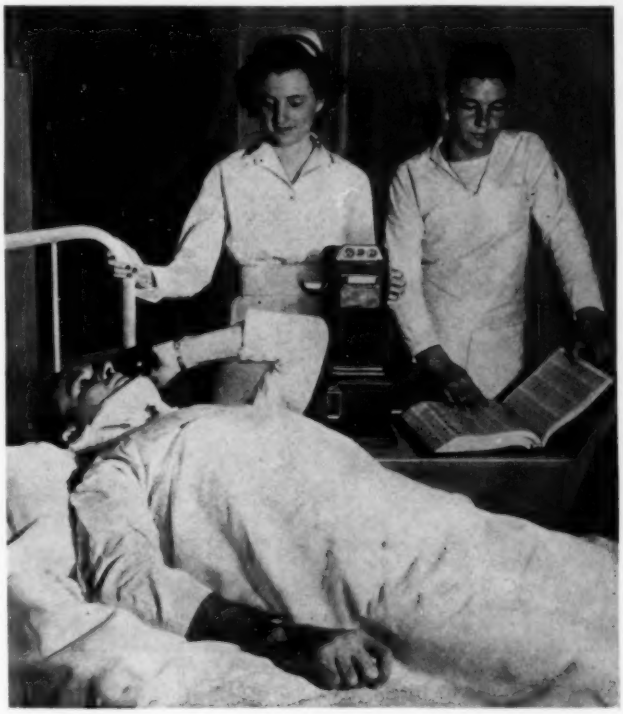
A telemobile brings the convenience of telephone service to a dog show which, like many other public gatherings, would otherwise be without it

Interior of a telemobile, showing the arrangement of space to accommodate booths, waiting customers, and attendant

other very practical ways in the public telephone promotion job. For example, the increasing number of public telephone installations at outdoor locations recognizes that they are sometimes better public servants out-of-doors than indoors.

The end of a transit line, or a transfer point in the outskirts of a city, is illustrative. Here people often need to make calls after the stores in the neighborhood are all closed.

Missed the bus! Train delayed! Must call home! The outdoor public telephone meets the need. Many more of them are coming into use.



One type of telecart, which brings coin-box telephone service to bedridden patients in veterans' hospitals

The outdoor location is also playing an important part in many new residential areas where facility shortages prevent furnishing main-station telephone service for the time being and where suitable indoor locations are not available.

In some places they are also being placed experimentally along superhighways where roadside commercial establishments to house indoor public telephones are often non-existent or few and far between.

There are other new developments designed to do whatever can be done to provide convenient public telephone service wherever it is needed.

The telemobile, an attended public telephone center on wheels, with about six booths, space for an attendant, and seats for customers, is often used to meet the special needs for service at county fairs, important golf tournaments, dog shows, and similar occasions. They get around.

Their war record is distinguished. Some of them served on the decks of battleships in dock, and others served at desert military posts. They were widely used where indoor space could not be obtained immediately and where speed in establishing service was important.

The telecart, the tea wagon telephone, is a war baby originally developed to bring telephone service to the bedridden patients in military hospitals. It did its job well and is still used widely in the hospitals of the Veterans Administration.

Colorful booth installations attract attention—and customers. This pair is in a New York City subway station

Today, advance planning in coöperation with the V. A. is making it possible to equip these hospitals with suitable telephone outlets, with the result that a nurse can plug in a telecart for service at the bedside of any bedridden veteran.

For the wheel-chair patient, public telephones are installed in oversized booths, big enough to accommodate his chair. For those with injured hearing, hard-of-hearing (amplifying) sets are provided; and for men on crutches there are booths with and without seats, so they may choose whichever is more convenient.

You may never have seen Gelett Burgess' purple cow, but in New York City and perhaps in other places you can see gay red telephone booths. They are intended to and do attract attention and customers in places where they might otherwise be overlooked.

So far, the attention-getting record of these booths is remarkable. Repainting a booth red, and thus impressing on passers-by its convenient availability, generally increases the revenue about 25 percent.

Coupled with other improvements, revenue increases have been even greater. Public telephone people have, for example, removed a group of four booths, installed three red booths a few feet away at a better location with improved lighting and directory facilities, and have found that the increased usage thus stimulated has stepped up revenues by 780 percent—a rate of $1,600 a year.

Outdoor booths at gas stations are going up in the color motif of the gasoline company whose products are

sold there—another example of the variety of possibilities for using color in this field.

The use of striking color is, of course, appropriate only at selected locations and, as you might expect, intelligence and taste are necessary to achieve pleasing and effective results.

Multiple Objectives

THE ATTRACTIVE color treatment is illustrative of the new attention which the promotion people and engineers are turning to the job of improving public telephone service and revenues.

The possibilities of improving lights, booths, directory facilities, signs and booth ventilation are all being studied. The result will no doubt be still further improvements in the appearance, as well as the general convenience, of public telephone installations. Meanwhile, the present fuller utilization of existing facilities—booth fans, illuminated signs, special exterior finishes, and the like—is already bringing benefits to the users of this most necessary service.

More modern and convenient public telephone service, more widely used by a more satisfied public, with increasing revenues to the companies, are the aims of this big nickel, dime, and quarter job.

Who's Who & What's What

(*Continued from page 3*)

1944 he was at W. E. headquarters in New York, where his duties included contract negotiations. In 1944 he became assistant general patent attorney of the A. T. & T. Company, and since 1945 has been general patent attorney.

SINCE 1937, when he transferred to the then Procurement Division, now the Bureau of Federal Supply, of the U. S. Treasury Department at Washington, GEORGE E. DESJARDINS has been interested in the Federal Government's utilities services. With a background of an electrical engineering degree from the University of Maine, he has, as engineer and economist in the service of the Federal Government, been engaged in studying some of its telephone and communications problems. The answer to one of them is the recently installed Federal Government Inter-Agency Dial Switching System, which he helped develop over a period of ten years and which he discusses in this issue.

Among his present responsibilities is a project of current interest to the Bell System operating companies. This is the U. S. Treasury's "consolidated telephone contract" program, covering some 40 major city areas, where substantially all telephone service to Governmental activities may be procured under a series of master contracts between the Bureau of Federal Supply and the various companies. Mr. DesJardins, working with the companies' tariffs and engineers, sets up schedules of rates applicable to each area, which schedules are used in operating under the contracts. The resulting simplified operation is mutually advantageous.

ALTHOUGH FREDERICK A. WISEMAN'S article in this issue appears as a sequel to "The Biggest Offer Ever," which he contributed to the MAGAZINE for Winter 1947–48, it describes an operation which preceded the 1947 convertible debenture offer and greatly simplified the handling of it. Mr. Wiseman's Bell System career is recounted briefly in the earlier issue.

THE AERIAL PHOTOGRAPHS on pages 24 and 51 were obtained from Fairchild Aerial Surveys Inc.

Rural Telephone Progress—1947

THE aggressive nation-wide Bell System program for providing telephone service for another million customers in rural areas is moving along ahead of schedule. This plan, of unprecedented proportions, was announced in 1945 as the first post-war step in resuming the active extension and improvement of telephone service in rural areas. Considering the magnitude of the undertaking and the serious shortage of all kinds of supplies, it looked like a three- to five-year job.

Actually, by the end of 1947, only a little over two years after V–J Day, the Bell Companies had added 700,000 telephones in rural areas: 70 percent of the job had been done in about half the time. To do it, new rural customers were connected at a rate many times faster than ever before in the Companies' history.

During 1947 alone, 309,000 were connected—a pace which brought telephone service to about 1,000 additional rural families each working day of the year.

Today, as a result of this record performance and the active rural programs in other telephone companies throughout the country, it is estimated that about 42 percent of the farms of the country have telephone service. This compares with 32 percent at the beginning of 1945.

Back of the progress made on the Bell System rural extension program is the story of the work of literally an army of engineers and rural experts who have given their full time to the job. Despite unusual difficulties, they have built enough new rural pole line in the last two years to stretch twice around the world. In the same period 300,000 miles of wire have been strung.

In addition, they have made a real start toward improving and modernizing rural telephone service. Lines which had been temporarily overloaded to provide service for people without any service at all are being relieved; the aim is to reduce the number of parties on a line to not more than eight and ultimately to less than eight. And, as rapidly as possible, the older crank-type telephones are being replaced by the most up-to-date types of hand sets.

PROBABLY nothing, however, expresses so well what has been accomplished thus far as the testimony of the people themselves; people in out-of-the-way rural places all over the country who have been brought closer to each other and to the outside by these new telephone lines.

For example, when the 168 rural families scattered over some 60 square miles in and around the virtually isolated communities of Bayside and Bonnie View in southeast Texas were connected to the new rural telephone lines which were built into their neighborhood last fall, they spoke of it as one of the most important events of the year. They compared the importance of the 48 miles of new rural pole line serving them to the new network of improved highways just being completed in the area. And this is understandable, for telephone service has removed the serious obstacle of distance. Friends, relatives, business associates, doctors, and police were now as close as their telephones.

This freedom from isolation was at-

tained in thousands of remotely located communities all over the country in 1947 as Bell System pole line building crews moved in.

A tow-headed West Virginia mountain boy expressed it, in his own way, when he spotted telephone linemen heading his way. "They're coming!" he shouted. "The linemen are coming. They say we'll get our telephone before the end of the week, and so will Grandma!"

City comforts drop off quickly up the road where the boy lives, some miles from Charleston, West Virginia. The strip of macadam soon dwindles to a meandering dirt road, impassable in winter. A railroad spur provides the only other connection with the outside world.

For weeks the families in the valley and on the surrounding slopes had watched intently while telephone construction crews pushed ahead slowly, blasting holes in the rocky soil to set each pole, in many places cutting and clearing the dense growth of trees and underbrush so trucks and machinery could get through, and oftentimes carrying materials into place by hand where the mountains were too steep for trucks to get in.

The promise of telephone service in the valley was being met. It would provide an important new link with the outside world for all the families in the valley, all the year around, no matter how hard the winter.

An Oklahoma farmer who recently wrote to the telephone company expressed it still another way:

"I watched your crew for days—cutting right-of-ways, dynamiting every pole hole, and then finally connecting our service. Your company has taken our farm area out of isolation. The telephone has given us added protection from careless people who are responsible for our forest fires, and lawless elements who sometimes invade the farm districts. Most of our families live far apart and a good distance from public transportation, and with the telephone they can expedite assistance."

More, probably, than any one else, farm people know this feeling of security. It

comes of incidents such as that which occurred outside Rugby, North Dakota recently, when the teacher of a rural school was able to telephone and get badly needed medical help for one of her pupils. The school telephone had been installed only a short time before; it was one of many connected to a network of new telephone lines built into the neighborhood.

THE Texas, West Virginia, Oklahoma, and North Dakota experiences mentioned briefly here are only typical. They echo hundreds of others across the country and can be repeated in every state. They mark the steady progress of the most intensive rural telephone building program ever undertaken by the Bell System.

This rapid progress in the building program would not have been possible without the fullest use of fast, economical construction methods developed and perfected by telephone engineers in recent years. Stronger wire cut down the number of poles required considerably: poles are now set farther apart. Better tools have helped to speed up the lineman's job: portable power-driven augers now dig pole holes where rock doesn't interfere; plows dig trenches, bury wire, and cover it, all in one operation in localities where soil conditions permit. In addition, with the close cooperation of the REA and private power companies, the important new techniques of using the same wires to provide both power and telephone service and of using the same poles to carry both power and telephone wires are being introduced as rapidly as practicable.

As for what's ahead—the Bell System rural program will continue to be pushed ahead at all practicable speed in 1948.

IT IS SAFE to say that at least a hundred persons have told me during the last forty years that Professor Bell tried to sell to them, or to their fathers or uncles, or intimate friends, his telephone stock at a very low figure—$10 a share is the price usually mentioned—and that, to their everlasting regret, they missed this opportunity to become rich by refusing Bell's offer with some such cynical remark as, "I have no money to throw away on such foolishness as a telephone." It is a pathetic picture that this conjures up, but all these stories are untrue, for neither the great inventor nor any of his associates ever peddled a share of Bell stock. If either of us sold any it was through a broker on the stock exchange after it had a market value above par.

A popular variation of this story is that some one owned a big block of telephone stock, and being in financial trouble gave it to a creditor, who took it unwillingly as a thing of no value, but who afterwards became wealthy from it, while the hard-up man who brought him his fortune struggled on in dire poverty. This is also fiction.

From "Exploring Life," the Autobiography of Thomas A. Watson. Appleton, publisher, 1926.

Dual Use of Central-office Mechanisms for Two Types of Traffic with Different Busy-hour Peaks Makes Additional Facilities Available for Customers

Making Inter-Office Trunk Equipment Do Double Duty

Benjamin K. Boyce

A CONSTANT PROBLEM of telephone engineers is to have *enough* equipment *where* it is needed *when* it is wanted, since wide swings in customers' requirements occur daily. In general, the equipment needs of the busy hours of the busy season must be taken into consideration.

Fortunately, one of the useful properties of telephone circuits is that they may be rearranged—interconnected, disconnected, extended, reduced, within certain limits—for longer or shorter periods, to form new or additional direct circuits to this point or that and for one reason or another.

It is principally with toll circuits that this is done, and with them it is a not unusual occurrence.[1] Some of these rearrangements can be planned in advance—as when it is apparent that extra toll circuits will be necessitated by differences in day and evening traffic or to provide for scheduled conventions or sporting events or seasonal usage. Others must be made on an emergency basis, because of unpredictable changes in traffic flow and because of circuit interruptions.

It is feasible to provide for and schedule a similar rearrangement of *local* circuits under certain special conditions. These conditions include the existence in one local exchange area of many central offices with a myriad of inter-office trunking circuits among them, and a geographical or other situation which is conducive to the flow of telephone traffic in different directions at more or less regular times and in substantial quantities.

These special conditions prevail in the Manhattan local exchange area.

Manhattan is what most people mean when they say New York, although it is but one of the five boroughs which comprise New York

[1] See "On Watch—All Over the Map," QUARTERLY, April 1939.

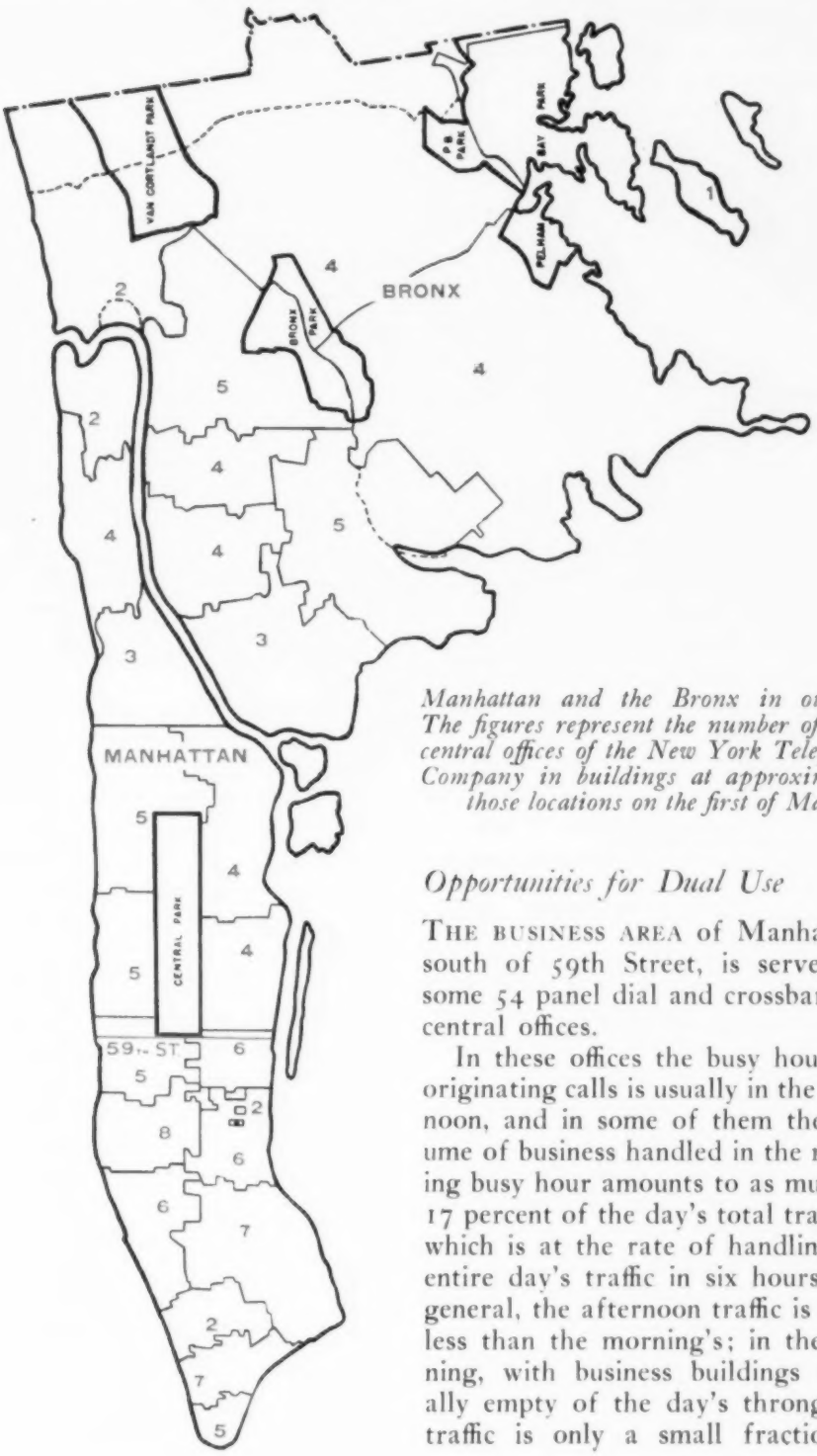
Manhattan Island, looking northward from the Battery toward the Bronx. In the foreground are the skyscrapers of the downtown financial district; at the left is the Hudson River, with a bit of New Jersey beyond; and at the right is the East River, which separates Manhattan from Brooklyn and Queens Boroughs

City. It is a long, narrow island, two and a half miles at its greatest width, and more than 12 miles from its upper limit, the Harlem River, to its lower extremity, the Battery, which looks out upon the waters of New York harbor. Manhattan has a permanent population of nearly 2,000,000, which is more than doubled each week-day by an influx of transients and commuters.

A few blocks above the Battery is Wall Street, on and about which are grouped many large financial institutions. Northward are found light manufacturing and mercantile industries and wholesale and retail merchandising; from 42nd to 59th Streets is, broadly speaking, the region of theaters, hotels, department stores, and specialty shops of many kinds.

North of 59th Street, which may be said to be a dividing line, Manhattan is largely residential in character; and above Manhattan lies the almost wholly residential borough of the Bronx. South of 59th Street the business of Manhattan carries on.

It is the clear-cut difference between the two sections, residential and business, which creates the corresponding difference in the characteristics of local telephone usage. And it is the latter difference which makes possible the dual use of central office equipment on which inter-office trunking circuits terminate.



Manhattan and the Bronx in outline. The figures represent the number of local central offices of the New York Telephone Company in buildings at approximately those locations on the first of May

Opportunities for Dual Use

THE BUSINESS AREA of Manhattan, south of 59th Street, is served by some 54 panel dial and crossbar dial central offices.

In these offices the busy hour for originating calls is usually in the forenoon, and in some of them the volume of business handled in the morning busy hour amounts to as much as 17 percent of the day's total traffic—which is at the rate of handling the entire day's traffic in six hours. In general, the afternoon traffic is much less than the morning's; in the evening, with business buildings virtually empty of the day's throng, the traffic is only a small fraction of

the morning busy hour. The consequence is a surplus of unused central office equipment during afternoon and evening hours.

The residential section of Manhattan, north of 59th Street in general, is served by 27 central offices. In the Bronx there are another 32.

Here, typically, the volume of traffic is spread throughout the entire day, without the pronounced morning busy hour that occurs in the central offices serving the business section. There is, nonetheless, a large evening requirement for equipment in central offices serving a residential area.

Now it isn't practicable, in a metropolitan area such as Manhattan, to combine in a single central office some subscriber lines from the downtown business section with others from the uptown residential section and thus obtain a composite volume of traffic in the morning and evening busy periods. But *it is possible* to combine certain elements of the inter-office trunking circuits within a central office so as *to use them with the business-area central-office trunks during the morning peak hour and then to use them again with residential-area central-office trunks during the evening peak hour.*

This is possible because, in central offices serving residential areas, the incoming trunks from business-area central offices will have a pronounced morning peak, when the business lines are most active, with much less evening traffic; while in the same residential-area central offices the incoming trunks from residential offices in the same neighborhood will carry their peak loads in the evening—with a somewhat smaller volume of traffic in the morning. This is probably due to a high volume of "neighbor calling" during the evening, when people are usually at home.

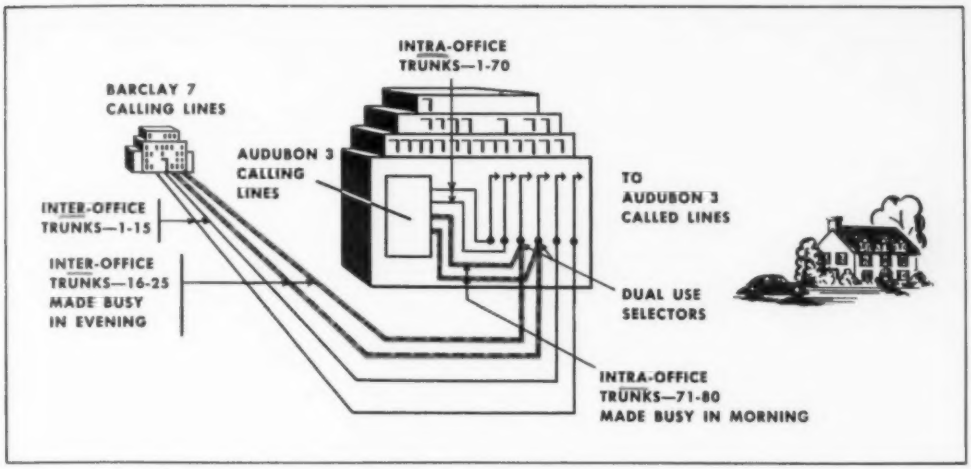
In other words, the opportunity exists in certain central offices serving residential areas to use incoming trunk equipment from business-area central offices during the morning peak and then to re-use the same equipment in the evening by discontinuing use of the equipment with trunks from business-area offices and using it with trunks from residential-area offices in the same neighborhood. The dual use of this equipment, at the morning and evening peaks when it is most needed, is obtained by bridging together (cross-connecting) the incoming trunks from the business-area and residential-area central offices at the residential office which they both enter.

BECAUSE the process is as simple as it sounds involved, let's illustrate by means of an example:

Assume there are 25 trunks in a group from a downtown Manhattan business-area central office—say Barclay-7—to an uptown residential-area central office—say Audubon-3—both offices having panel dial equipment.

The evening traffic on this trunk group being lighter than the morning traffic, it is possible to discontinue 10 of these circuits during the evening. The local Audubon-3-to-Audubon-3 group [2] normally has 70 trunks and this group, having an evening busy hour, is badly overloaded in the evening, but is entirely adequate in the morning. We can then use the 10 trunk equipments not required in

[2] Calls within the same panel-dial central office are trunked from calling to called line.



Certain elements of the inter-office trunking circuits within a central office may be made to do double duty by bridging together incoming trunks from central offices having different busy-hour peaks. For a fuller explanation of the situation assumed in this sketch, see the accompanying text

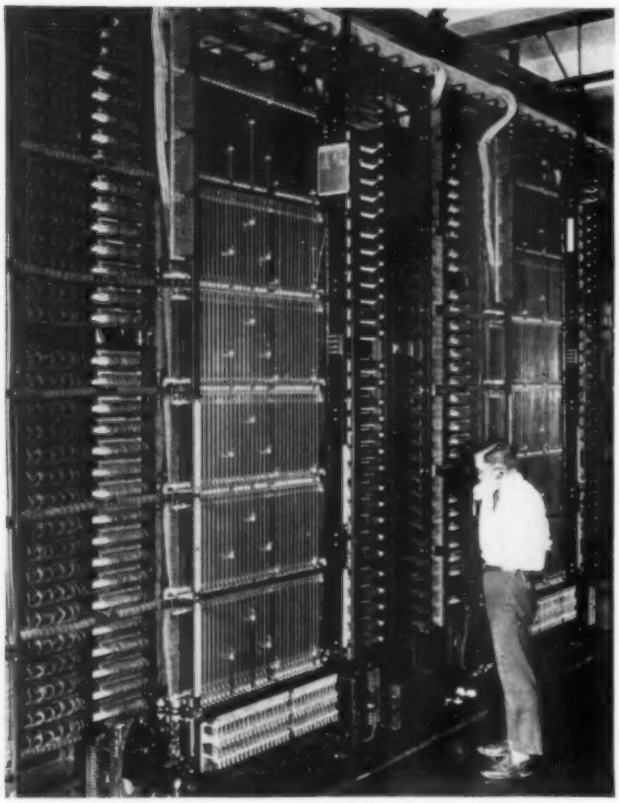
the evening from Barclay-7 to Audubon-3 to increase the local group from 70 to 80.

These 10 trunks from Audubon-3 and from Barclay-7 would both be bridged on the same set of incoming trunk equipments at Audubon-3. In the morning busy hour, the 10 trunks, 71 to 80 Audubon-3-to-Audubon-3, would be made busy at Audubon[3] by means of a key,[3] and during that period these trunks would be used only in the group from Barclay-7 to Audubon-3.

In the evening, the busy test would be removed from the trunks 71 to 80 in the Audubon-3-to-Audubon-3 group and trunks 16 to 25 in the Barclay-7-to-Audubon-3 group would be made busy by a separate key. In this way, dual usage of these 10 incoming trunk equipments is obtained by the use of additional outgoing trunk equipments for the Audubon-3 local group and by utilizing certain spare make-busy switches which were available in both of these buildings. Two additional keys have to be provided at the Audubon-3 central office, one for making the trunks busy in Barclay-7 in the evening and the other for making the trunks busy in Audubon-3 in the morning.

This arrangement for the dual use of inter-office trunk equipments is in effect in New York City (Manhattan, Bronx, and Brooklyn) to provide 255 additional trunk circuits in 26 different trunk groups. The largest increase in any trunk group to which this plan was applied was a group of 70 circuits in the morning,

[3] The use of keys for making the trunks busy is necessary as so far it appears to be unreasonably expensive and complicated to equip the trunks so that when one is in use in one office it would automatically be made busy at a remote central office. Also in such a case it is satisfactory to leave these ten trunks permanently bridged; i.e., when one of them is being used as a local Audubon-3 trunk, the conductors from Barclay-7 will remain bridged on the connection. The transmission loss resulting from these bridged conductors can be tolerated on such a local connection.



Panel dial selector frames in a Manhattan central office

which was increased to 92 in the evening. In one case where this arrangement was used, we were experiencing over 3,000 overflows[4] from the local trunk group daily. These overflows were of course largely in the evening busy hour. After this trunk group had been increased in the manner just described, the overflows were reduced to the small number (35) which would normally be expected on a group the same size. We were thus able to effect a substantial service improvement in these 21 offices at a nominal expense and at a time when it otherwise would have been impossible for us to obtain equipment promptly for providing these extra trunks.

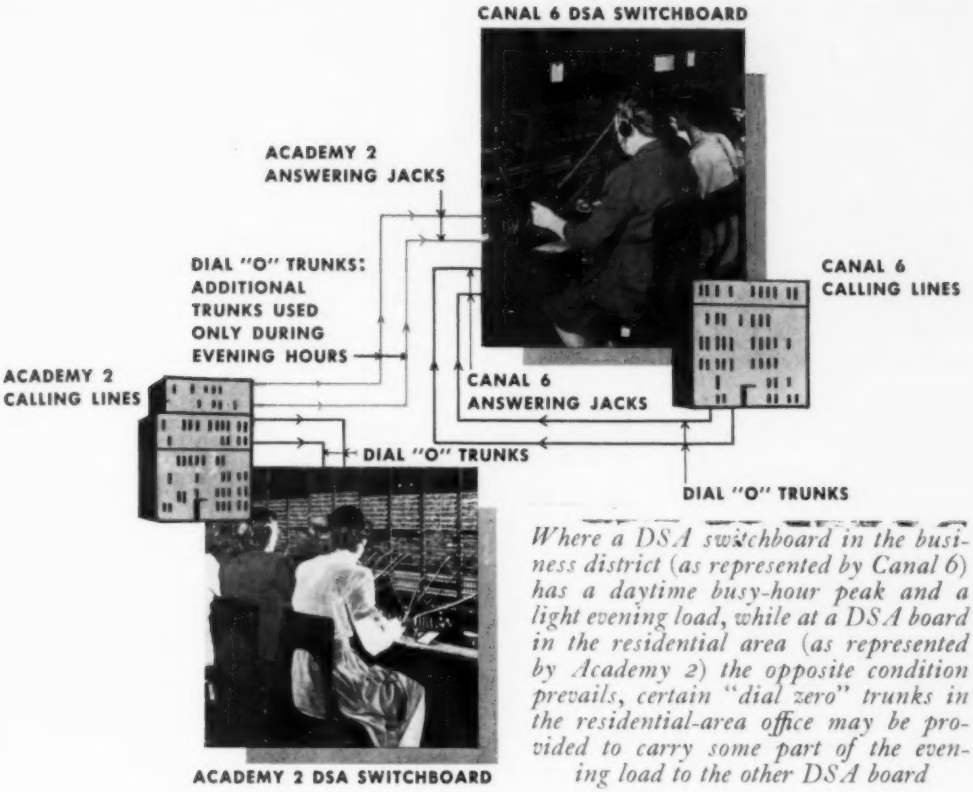
In these offices, we shall continue this arrangement after normal (post-war) conditions have been restored, in order to obtain the saving in inter-office trunk equipments.

As THE SIZE of the city increases, there is a decreasing number of direct trunk groups from the business-area central offices to the residential-area central offices, and a corresponding increase in the number of offices reached via the tandem systems.

A careful study of our tandem board situation showed that, with the routings as they now exist, the equipment at our tandem boards from business-area offices has a peak in the morning and the equipment from certain residential-area offices has a peak in the evening.

In a few such cases it was found that incoming tandem equipment from business offices having a morning busy hour could be reduced in number in the evening, and this released equipment was used on trunk groups from residential offices having an evening busy hour. Traffic routed via a tandem board is made up of many widely diversified types of traffic, and accordingly there is a tendency to have

[4] Offered calls which could not be completed because all inter-office trunks to the called central office were in use.



Where a DSA switchboard in the business district (as represented by Canal 6) has a daytime busy-hour peak and a light evening load, while at a DSA board in the residential area (as represented by Academy 2) the opposite condition prevails, certain "dial zero" trunks in the residential-area office may be provided to carry some part of the evening load to the other DSA board

the morning and evening peaks equalized to some extent. We did, however, find 19 offices where we were able to add 66 trunks to their tandem groups by this same dual-use method without any great expense.[5]

A SOMEWHAT SIMILAR ARRANGEMENT was found to be very helpful in obtaining greater utilization of "DSA" positions in both business-area and residential-area central offices.[6]

The DSA switchboard positions in the downtown business-area offices were heavily loaded in the morning, but there were spare positions in the evening, whereas certain residential-area offices had substantial peaks in their DSA position requirements in the evening. In such cases, arrangements were made so that the "dial zero" trunks in the residential-area office which normally terminate on the local DSA board would, in the

[5] These cases were handled the same as inter-office trunks with one exception. In the case of inter-office trunks, the dual-use trunks in each group were permanently bridged, the transmission loss being unimportant. With tandem trunks, transmission is much more important and the dual-use trunks were all wired through private line test jacks by means of which the trunks can be opened up to one of the offices when they are being used by the other office. The keys for making the trunks busy were used exactly the same as for the inter-office trunks.

[6] DSA positions, so-called, are manual switchboard positions in dial central offices. By dialing "o" (zero), the customer reaches a DSA operator who will assist him in completing a local call with which he may be having difficulty, and will complete certain toll calls.

evening, be extended from the local DSA board to the DSA boards in the downtown business-area offices.

Such an arrangement required very little equipment, and provided substantial relief to the DSA switchboards in the residential-area offices. At one time in Manhattan, traffic equivalent to a load for 30 DSA positions was being transferred from residential-area offices to business-area offices in the evening.

Beating the Equipment Shortage

THE PROBLEM of dual use of various types of telephone plant in metropolitan areas is being given careful consideration.

In the New York City area, the problem is complicated by the very size of the trunk plant involved. We have, however, been able to accomplish substantial results in equipment savings by the application of dual use of incoming selectors in the dial offices in metropolitan areas.

The instances of the dual use of facilities—of certain central office dial equipment, and of DSA switchboards—here described give an illustration of some of the things being done in the New York City area to improve local exchange service. Similar arrangements are in effect in other cities of this country, and in still others are being planned or studied.

If this is not literally following the injunction to make two blades of grass grow where but one had grown before, at least it is in the direction of making some of our equipment do about twice as much work as before. And that is not only money-saving efficiency; it is, in these days of all sorts of shortages, one means of giving our customers more and better service.

EARLY TELEPHONE EXPERIMENT

A Bell telephone has been put in operation between the office of J. Lloyd Haigh, of 81 John street, and his steel works in South Brooklyn, where the wire for the great cables of the bridge are being made. The wire passes through Buttermilk channel and across the East river, and is about five miles long. Conversation is carried on with ease, and a kiss, given close to the instrument at one end of the route was distinctly heard at the other.

* * *

An exchange thinks that the proposed kissing by telephone must be something like starting out for a clam-bake dinner and getting nothing but fog. The allusion to a fishing smack in this simile is obvious.

Newspaper items of 1877.

The A. T. & T. Vice President in Charge of Public Relations Points Out, in a Talk before the Minnesota Employers' Association, that Businesses Must Be Good Citizens

Business and People

Keith S. McHugh

WHOEVER first put the two words *public relations* together hatched up quite a bit of trouble, because ever since then people have been trying to explain what the words mean.

Each of you probably has his own idea; but I get the most help from thinking that public relations means simply the kind of relations a business has with people, and what you do to try to make them as good as you can.

It's the same for companies as it is for individuals—you'll be liked more, or less, according to the way you act and the way you talk. The only difference is that a company has more chances to make mistakes; and the bigger the company, the easier it is for people to have their doubts about you.

The reasons for this have probably already occurred to you, but they may bear a few minutes' discussion again.

If you don't mind one personal recollection, I think it will help to bring out how the problem gets bigger as the organization increases in size. I was raised in a small town in Colorado, and as soon as I was old enough I used to work after school and during vacations. At one time or another I worked for quite a few different people. But in every case, the man I worked for was the boss. He didn't have a boss himself who reported to someone else who had still another boss further up the line.

My boss was always president, secretary, treasurer, general sales manager, and everything else. He had no labor relations except with me and maybe a few other people who were working for him too. He never heard of public relations; but with no organization except one or two or three hired hands whom he could keep an eye on directly, he had the full responsibility and at the same time the full opportunity to deal face to face with every one of his customers, every supplier from whom

This is the text of an address to the Minnesota Employers' Association in Minneapolis on January 30.

he bought his merchandise, and every other person with whom his business had dealings.

Maybe he didn't do a perfect job, but he had every chance personally to make the most of every occasion. He got to know in a very exact way just what his customers liked and didn't like, because they kept telling him to his face. Also, he learned at first hand that what people thought of his business depended a lot more on what he did than on the way he talked, and that he couldn't say one thing and do another and get by with it for long.

In short, he was in a position to acquire from the ups and downs of everyday experience a lively and immediate sense of the things that public relations vice presidents nowadays make speeches about. What's more, nobody who came in with a complaint ever got lost in the wrong department!

OBVIOUSLY, I'm not going to say that a business will have good public relations just because it is small. But the man who is running a small business gets a wonderful head start—if he wants to make the most of it—from being continuously and directly exposed to the experience of having to get along with the people who make up his particular public.

He has another advantage too. People are not suspicious of him just on account of his size.

It's the most natural thing in the world for human beings to be wary when anything begins to look too big. Primitive people stand in awe of mountains. The man who has never seen an elephant is inclined to be cautious when he first meets one. He would be foolish if he weren't.

In much the same way, the public becomes wary as the size of a business increases, and this in itself tends to give a big company certain public relations problems on top of those that it shares with all business.

Free Business and Free Opinion

THE growth of big companies is not the only reason why business in general has become thoughtful about public relations. We are getting to be more aware of what has always been true: that in a country like ours, where opinion has the freedom that we also want for business, the freedom of business is dependent on the freedom of opinion. To say this is also to say that business will have freedom only where opinion has power; for if opinion ever loses its power, it will be because it is no longer free—in which case business will be captive also.

So if business wants freedom, it must expect that its limits will be defined by the public's judgment. It seems to me well for any business to remember this and take comfort from it, particularly when the public takes a different view of what it wants from what the business thinks it ought to want. On these occasions, no less than on others, the public is the boss and we shall be wise to recognize the fact, reflecting the while that if the public lost its power over us, we would still be the losers anyway. I offer this as a consoling thought against the day when the public, which is moved by emotion as well as by reason, in seeking to protect its own interest does something to injure your capacity to serve it.

Yet injurious action is, after all, a thing we are anxious to avoid.

What then shall we do?

The first half of the logic of the matter, in the view I have given you, is that it is desirable for any business to recognize that it ought to depend on the public's judgment.

The second half is that it is desirable for the public—from its own standpoint—to give business the freedom it needs to serve people well.

If this reasoning is sound, then it seems to me that two things follow:

First, business and the public must understand each other; if we are going to depend on the public's opinion, we must give the public enough knowledge about us to reach accurate conclusions, and we must also obtain a fair understanding ourselves as to how the public thinks, and what it is likely to think about anything we do.

Second, in addition to obtaining understanding, a business must do the things the public likes. But no business can do this unless it likes the public—that is, unless it sincerely wants to serve the public well. I know I am dealing in the obvious, but the obvious is fundamental and cannot be ignored. Doing what people like every time we have the chance is the foundation of good public relations and we cannot shut our eyes to it.

Also, since any business knows that there are times when it cannot do what the public likes, it has all the more reason to do everything it can whenever it can.

SIZE, as I have said, is something of a handicap in making yourself liked, because of the human tendency—and also the ingrained American tradition—to be suspicious of size. Further, as an organization grows, the mileage within it increases and top management is likely to disappear over the horizon from the places where the public is expressing its moods. But these handicaps only mean that more must be done to overcome them. How to begin? A good beginning, it seems to me, is not to forget the simple things we would never have a chance to forget if each one of us—like my old bosses in Colorado—were the whole works in his own enterprise.

You know as well as I do what some of these things are:

Putting yourself in the customer's place.

Telling why you take any particular action.

Giving reasons when you give answers.

Really exerting yourself to meet the customers' wishes.

Meeting the commitments you make.

Dealing sympathetically with complaints.

Not pushing a customer around from one person in the organization to another.

Regarding each person you are dealing with as an individual.

Remembering that employees are people.

Being courteous and polite out of sincere friendliness.

Being good citizens and good neighbors in the towns where you live.

These are some of them.

Yet, simple as these things sound, for some reason no business can do them without continuous, conscious, directed effort.

It takes time, effort, and money to put them over and make them really live.

It takes preaching and it takes example.

And it must start at the top.

COURTESY is no substitute for efficiency. But it takes nothing away from it, and it can add enormously to it. Everybody likes to be treated politely and as an individual. Moreover, people who exercise courtesy find that they enjoy it. It is such a mighty asset—this thing in human nature that makes it possible for a business to render service that is genuinely friendly.

A considerate, courteous, friendly attitude really can become part of a person's nature, inwardly felt as well as outwardly expressed. It may often need to be taught, but that does not mean that it need ever be unreal. In our own business we speak of the "extra" courtesies that may be rendered; I think that means extra in the sense of possibly going beyond the immediate expectation of the customer, but not in the sense of tacking on an artificial frill.

I doubt if any sizable business has yet gained—I don't mean just for itself, but for employees and customers as well—all the advantages that come out of thoughtful and considerate attention to the particular personal problems and needs of individual customers.

The plain fact is that the "little things" are not really little things at all. They are tremendous.

If we allow them to become little, that will only be because our perspective on them is not as good as the customer's.

Moreover, they are not little to the employee who performs them, any more than they are to the person for whom they are performed. The employee wants it realized, and it should be made known to him that it is realized, that in doing the great big little things well he is making the most of his job.

I don't think we can ever afford to forget that the more any business does to treat everybody it deals with as an individual, the more it will inevitably and at the same time be treating each employee as an individual.

There are many reasons for this, but consider only one: no employee can treat a customer as a real individual unless he knows and understands the company's policies. He in turn must have been treated as an individual to have this understanding.

"Overtones"

THE ESTABLISHMENT of standards, and regular measurement against them, can contribute to the considerate and friendly treatment of individual customers, in basically the same way that they are used to reduce errors and improve the more routine features of over-all performance. It is not much harder to know whether employees are courteous than it is to know whether they come to work on time. What is more, the men and women who are working at a job like to know that performance is measured against human and not merely mechanical standards. The gains that may be accrued from this kind of management will be real and not artificial. They can become a genuine part of the character of the organization and the people in it.

In our business we use the phrase "overtones of service" to try to describe some of the attributes I have been talking about. To the public it will make no sense—and I don't see how it could—if the individual overtones which a customer may hear in the words and actions of an employee, and which are encouraged by management, are not matched by what I might call the "overtones of corporate acts" for which the management is directly responsible.

An example will illustrate what I mean.

A while ago a woman came to one of our business offices to pay her bill. She explained to the cashier that she was a bit late in paying because her little girl had been sick and she didn't want to leave her alone. However, she hadn't wanted to put off paying the bill any longer, so she had finally decided to leave the house for an hour or so and come down to our office.

The cashier said she was sorry, thanked the customer for the payment and for the trouble she had gone to, and expressed the hope that her daughter would soon be well again. Later, after she thought the woman had had time to get home, the cashier called her to ask whether everything was all right.

I think that was a nice thing to do, and I imagine you do too.

But if you think so, what do you suppose our customer thought of it? She was quite overwhelmed, and said so. She thought the company was tops. And her whole picture of us was created by one simple, friendly act.

When an employee has so effectively created so favorable an impression, it would seem a pity for the management to nullify the gain by handling some corporate matter in a tactless or inconsiderate way. What would this customer have thought, for example, if she had looked in the newspaper after talking with our friendly cashier and seen something about the telephone company that made us seem mulish, thoughtless, arrogant, or all three? How could she reconcile two such different ideas? Obviously she couldn't.

Spreading Knowledge

Now I would like to say just a little about the other side of the relationship between business and people—the spreading of knowledge and understanding.

To the man who is running his own business, every part of what he is doing is mighty important. None of the parts get any less important when somebody else is doing them for him. Also, the man who is running his own business has all the knowledge about it that there is. He may not have enough knowledge to make a success of it, to be sure; but everything there is, he has.

That stops being so when he gets to be a corporation with a lot of employees. The corporation has a policy—but how much do the employees know about it? The employees know a lot about what the customers and the public think—but how much of what they know does the corporation know?

To come anywhere near matching the efficiency of a one-man business in these respects, there must be ample communication, and it must be two-way. As a part of it, aside from the technical knowledge and training that

employees need to perform their particular jobs, it seems to me that all the men and women in a company ought to have at least enough information about the organization, policies, objectives, and problems of the business to understand the general functioning of the organism of which they are a part. If the people who are in business do not understand what it is all about, it is hard to see how the public can be expected to understand it.

Giving Out the Facts

AFTER WHAT a company does, and what the employees know and think about it, probably next in importance in contributing to the public's state of mind is what the business says about itself.

Some companies say very little, I imagine pretty much on the theory that what they are doing speaks for itself.

Perhaps so; but I would prefer not to take that chance. Our own feeling as a public service organization is something like this:

The public is our big boss, and there is no question whatever that public opinion controls our enterprise. It's our job and responsibility to give the best telephone service we can, and we have pledged ourselves to do that.

We don't believe, however, that the public should be left unaware of what is entailed in the job entrusted to us. We think we ought to tell the story candidly, completely, and continuously.

Public opinion may sometimes be fractious, and sometimes slow in coming to a fair conclusion; but, given the facts, it can be trusted to come up eventually with sensible answers. If the facts are not known, however, you couldn't really blame the average American for thinking that we might give better telephone service than we do if we used bailing wire for circuits and charged half the price.

An important part of our point of view is that the public in the first place is entitled to know whatever it wants to know about us.

Should we just answer questions, then, and stop there?

Well, no—for the reason that while a lot of people are in fact interested enough to ask us a lot of questions, usually the first thought of most Americans each morning is not to wonder how the telephone company is getting along. They're more likely to be interested in the weather, and where their rubbers are if it's raining.

To get understanding, it is up to us to spread knowledge of the facts about the business. This we do out of the conviction, and on the basis of a great deal of evidence, that more public knowledge makes for more and better telephone service.

Keeping on the Track

MY MAIN REASON for mentioning some of our own ideas about informing the public is to point out that we have thought it right to stay on our own track with our own story about our own business—the only field in which we are entitled to be considered expert. It seems to me that the more this is done by business, the better will be the evidence presented to the public as a whole and the better informed American public opinion will be.

Another thing that seems to me

important in thinking about public opinion and public relations is the idea of continuity.

Winds of opinion are always changing, just as a customer can come into a store one morning as sweet as pie and be back in a fret in an hour. As public wishes and views change—as they will, for example, with changes in economic and social conditions—business must constantly face new problems and be alert to meet them. Yet a business which has developed out of experience a sound fundamental policy is likely to be better able to cope with change than one that has not.

Such a policy necessarily is one that recognizes the likelihood of change, and allows for it. Indeed, it demands that the business keep changing on its own initiative, preferably ahead of the public. It asks for continuous, objective self-criticism, and expects that habits will not be allowed to harden.

This kind of policy also contemplates that things which are important in the long run—including the things that help toward improving public relations—will not be tossed overboard to meet the exigencies of the moment, will not be jettisoned for opportunism.

Good Citizenship

MOST of what I have been saying has been about customers and employees. But all the people you have public relations with aren't customers. Every place where you operate or which your business touches is full of people who have ideas about you simply as citizens, and one of the things they get opinions about is what kind of citizen you are.

With every employee a citizen too, the character of his citizenship reflects yours, and the community's idea of the quality of your citizenship is pretty largely conditioned by how it regards him.

This subject has many aspects, but I will mention only one. That is the question of encouraging local management to look on good citizenship as a natural part of their job responsibility.

No community will regard an organization as a part of the community unless the organization shows that it wants to take its fair part in local affairs. The people of the community have two bases for judgment: first, the company's own behavior as a citizen, as made manifest by its local representatives; and, second, the things which the company's local representatives do as individual citizens themselves.

MERE LOCATION is not enough. It is quite possible to be located in Blankville for a hundred years and still be an outsider; but for the concern that is really in quest of good public relations, to remain an outsider is the last thing in the world that it wants.

Of course, asking local management to make you a good citizen in Blankville also means giving local management the authority it needs. Responsibility must be decentralized in fact as well as in theory. The people to whom you give the job of winning respect and liking for your organization as a good citizen cannot win such respect if it is apparent that they cannot act without approval from somebody else two hundred miles away. To be sure, there must

be continuous communication within the organization, but this ought to be for the purpose of equipping people to carry out their jobs, not for the purpose of preventing them.

Keeping It Personal

THIS IDEA of good citizenship embraces so many of the things that make for good public relations that I should like to keep it particularly before you in closing.

Just consider some of the attributes of the person who most quickly comes to your mind as a good citizen.

He's a good neighbor, to begin with—friendly, thoughtful of the wishes of others, and glad to lend a hand whenever he can help.

He speaks his mind on community affairs, but before he does so he tries to make sure he knows what he is talking about. And he's ready and willing, too, to take his share of responsibility.

He is not a stuffed shirt.

Nor is he merely sentimental. After all, he wants his neighbors and fellow citizens to think well of him. He is anxious to enjoy good standing in the community. He wants to earn —and to keep—a good name and reputation.

The business that is interested in staying in business has some of the same ambitions. It seems to me that a good way to realize them is to exercise some of the same virtues. No doubt you have noticed that thinking in these terms helps to make the whole subject that I have been talking about a personal matter for each of us.

When you think of a citizen you think of a person—an individual.

In the same way, when you think of a business being a good citizen you have to think of what all the individual people in it—at all levels in the organization—are doing to make it so.

To get and keep the kind of reputation that we call for convenience "good public relations," intrinsic quality of product and technical proficiency of service must assuredly come first. But beyond these, the things that each of us can do under the heading of good citizenship, with all that that implies, will largely determine the kind of relations that any business will enjoy with the people who are the public.

It Was a Tough Winter

IT *was* a tough winter for a large part of the Bell System.

From the Great Plains to the Atlantic, beginning last November and continuing well into March, storm followed storm: little storm or big, snow or sleet or even tornado, some doing no damage to telephone plant and some doing a great deal.

Take just two of them by way of illustration.

In New York and a section of the eastern seaboard, the snowfall which began the day after Christmas deposited a greater depth of snow there than ever before within the memory of living man or the local weather bureau. It snarled and practically halted transportation for a while, and it brought unusual traffic peaks to the central offices, but it did little real harm telephone-wise.

Covering a vastly greater area, the sleet storm which started on New Year's Eve in the Texas Panhandle and swept north- and east-ward to the Great Lakes and lower New England created more havoc than in many a year from that cause. The great weight of ice on the wires, in places accompanied by strong winds, leveled 15,000 poles, put 6,000 toll circuits out of order for a time, and silenced 125,000 telephones.

To repair the damage inflicted by the season's wintry storms, the Western Electric Company supplied in a hurry such items as 30,000 miles of wire in cable, 15,000 miles of other wire, and 300,000 pounds of miscellaneous hardware—in addition to supplies drawn from regular stock piles. The men of the Associated Companies and the Long Lines Department carried out restoration on a night-and-day schedule, often in the face of rough weather and bitter cold.

They carried out the restoration even while the Bell System's service and construction program continued forward at driving pace.

Consider these indicative figures:

In those five storm-ridden months, the Bell System installed more than 3,000,000 telephones, with a net gain —after changes and removals—of more than 1,300,000 telephones for the period. And during the winter months just passed the System handled an average of 165,500,000 telephone calls a day—which is 14,500,000 calls a day more than the average for the preceding winter.

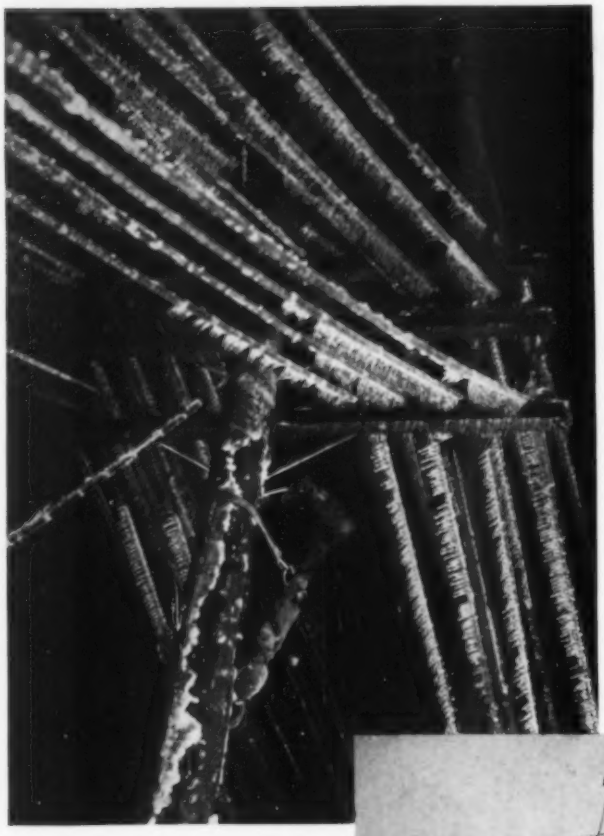
Old Man Winter didn't succeed in slowing up seriously the System's efforts to build and install the equipment to bring service to the many who have been waiting for it and to provide for the requirements of the coming years. But the pictures on the next eight pages show how hard he tried.

This New Hampshire toll line, in the territory of the New England Telephone and Telegraph Company, was temporarily out of service

Snow-shoe weather is unusual in Connecticut, where the Southern New England Telephone Company operates

Trees often had to be removed before repairs could begin—as in this scene from the New York Telephone Company

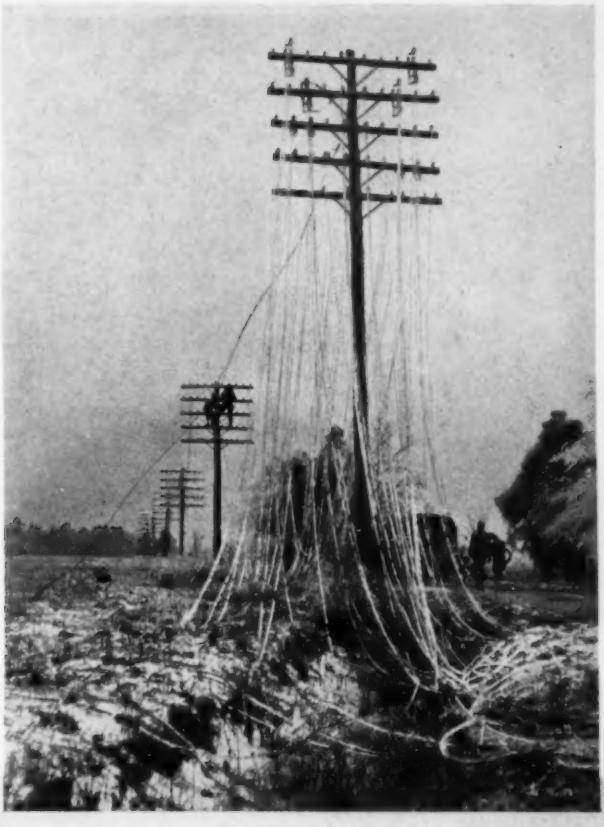
In New Jersey, sleet brought down electric power wires too, and kerosene heaters had to be brought into some central offices



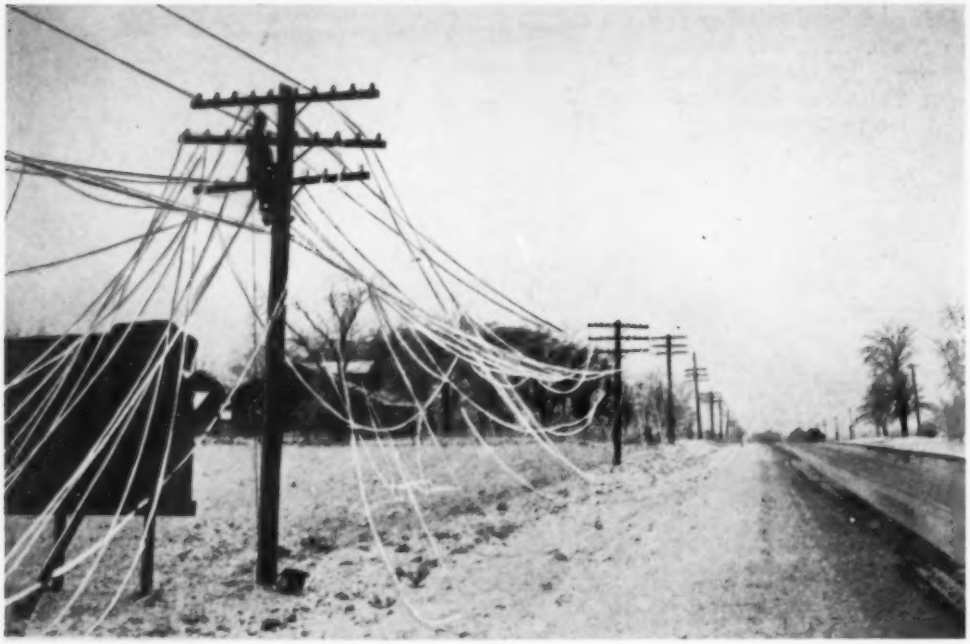
The New Jersey Bell Telephone Company's outside plant was hard hit by the New Year's Day storm

Plant employees of the Bell Telephone Company of Pennsylvania push ahead with service restoration

This open-wire toll line is in North Carolina, in the territory of the Southern Bell Telephone and Telegraph Company

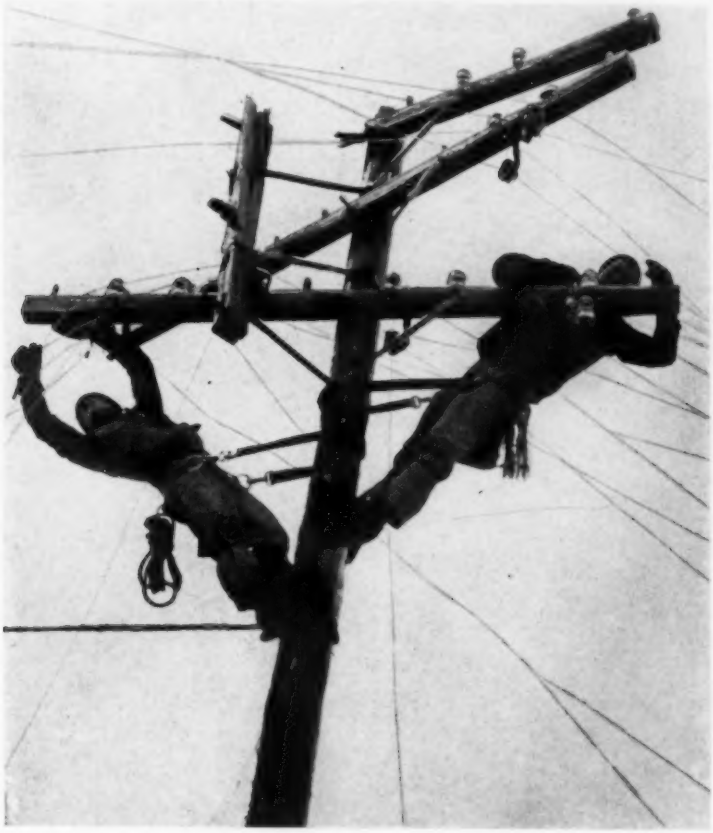


Half a tree had to be hauled up by winch line before the Michigan Bell Telephone Company's men could undertake repairs here



Lines of the Indiana Bell Telephone Company (above) and the Illinois Bell Telephone Company were victims of the New Year's sleet

It was bleak in Iowa as this crew of the Northwestern Bell Telephone Company went about setting a pole here after one of December's storms

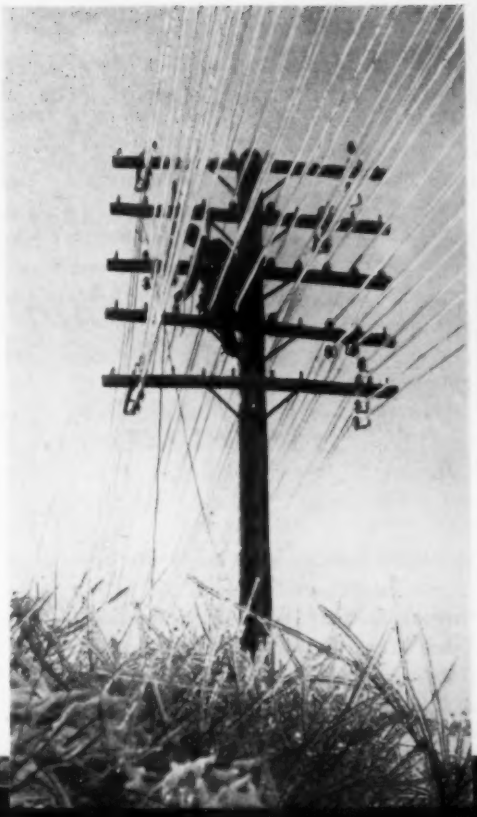


Two men of the Southwestern Bell Telephone Company tackle wrecked cross-arm and tangled wires on a pole in Arkansas

The ski-mounted sno-mobile on the trailer can carry two men over dry snow at 60 m.p.h. with their repair and testing equipment, emergency rations, snow shoes, and other winter necessities. It is part of the winter preparations of the Mountain States Telephone and Telegraph Company in Wyoming, whose Teton Mountains form the back drop for this picture

The January 1 sleet storm invaded the territory of the Bell Telephone Company of Canada to fell a pole line on the outskirts of Windsor

This Long Lines Department pole, with its glistening burden, typifies many another of its fellows from Texas to the Atlantic which stood firm under such weight of sleet



Throughout the storm area, the Western Electric Company's distributing houses were on the alert to speed the supplies on which restoration of service depends

Bell System Inventions Are Not Suppressed

Hubert A. Pattison

OCCASIONALLY the charge is made that the Bell System "suppresses" patents. What is really meant is that patented inventions which have been made or acquired by the Bell System are suppressed.

This charge is false.

In considering this question, it is important first to distinguish clearly between "non-use" and "suppression." They are not synonymous. Everyone knows of patented inventions that never saw practical use; competent authority estimates that probably more than half of all patented inventions are not used commercially.

Experience in the Bell System in utilizing its patented inventions shows that, while a high percentage go into its plant, there are many others which never find their way into such equipment. There are good reasons for this.

The use of all patented inventions is an impossibility in any rapidly advancing art such as telephony. Inevitably, many are ahead of their time and must await the development of related things before they can be put into the plant. Others lose out in competition with even better inventions made by Bell System engineers or by others. Still others become obsolete long before their term of 17 years expires. To urge or imply that these "unused" patented inventions are "suppressed" is misleading and false.

What do we find when we use "suppression" correctly? We find a charge which makes no sense and which is not true.

Far from suppressing any inventions, natural self-interest requires that the Bell System make every effort to put new developments to use in the telephone system wherever their utilization will result in better or cheaper telephone service.

Sometimes a new device seems simpler than it really is, leading the public to wonder why it was not available earlier and perhaps giving rise to suspicions of suppression of inventions. The introduction of the hand telephone set, combining a transmitter and receiver on a single handle, seems to have produced such a reaction.

Actually, a great deal more than the idea of mounting the transmitter and receiver on a common pick-up frame was necessary before a satisfactory telephone hand set could be produced. Thus it was necessary to invent a transmitter unit whose performance would not be impaired by being used in any position or by being picked up and put down repeatedly in ordinary usage. It was necessary to find some practical way to prevent interaction between the transmitter and receiver units, through the common frame, setting up a disagreeable noise or howl which made commercial use impossible. The research

required was unusually difficult and took a long time; without it the "simple" hand telephone was worthless for use in the Bell System.

In short, the reason why the hand type of telephone set did not go into widespread use in the Bell System until 1927 was simply because its development had to await several essential inventions and not because of any attempt to protect investment in earlier types of units.

There have been other new developments in telephone communications equipment which have been delayed awaiting further required research in the thing itself or in collateral things which were needed to place it in commercial use. And they get used if they show promise of better or cheaper service.

THE unfounded assertions that new technical developments are held back by large companies, in spite of the overwhelming evidence of technical pioneering by such companies, are by no means confined to the instance of the Bell System. Although the Bell System is not informed about the practices of other companies to the extent that it knows its own operation, published evidence has come to our notice which shows that business in general is also innocent of suppression or withholding of patented inventions.

The subject has been investigated at public hearings at the instance of Congress several times, and the weight of evidence has always shown that there is no suppression of patented inventions. Indeed, only doubtful inference and unsubstantiated rumors have been offered as contrary evidence.

Thomas A. Edison, the great inventor, testifying before a committee of Congress in 1912, said that he did not know of a single case of suppression of a useful invention.

At the hearings held in 1939 by the Temporary National Economic Committee, Dr. Vannevar Bush of the Carnegie Institution, and George E. Baekeland, pioneer manufacturer of plastics, made similar statements. Mr. Baekeland brought out in connection with his statement that the American Chemical Society had circularized its members asking for any instances of suppressed patents and that not a single example was reported.

Dr. Frank B. Jewett, President of the National Academy of Sciences, said in 1943:

"Personally, during an experience in industry of nearly forty years I have never known of a single authenticated case where a valuable invention was wilfully suppressed. Nor have I ever known anyone who claimed to know of a single such case."

In addition to making the fullest practical use of its inventions in its own operations, the Bell System also makes its patented inventions available to others on reasonable terms for a wide variety of purposes through patent licenses granted to other concerns. Such licenses enable the licensee to make use of any invention of the Bell System in the apparatus licensed, whether the Bell System itself uses that patented invention or not. The Bell System's general practices of making its inventions available to others are well-known in the communications industry.

As a broad statement, therefore, it can be said that if a Bell System patented invention is not being used, it is not only because the Bell System itself has no present use for it but because no one else has use for it either.

The Government's Inter-Agency Communication Network of Manual Switchboard and Tie Lines Is Now Superseded by a More Modern and Efficient Installation

Washington's New Federal Dial Switching System

George E. DesJardins

Engineer, Public Utilities Division, Bureau of Federal Supply, U. S. Treasury Department

MONDAY MORNING, February 2, 1948, was just another Monday morning for many Washingtonians; but for thousands of Government employees the day had finally arrived when they would have to change some of their telephone habits. The old direct tie-line and manual interdepartmental systems had been discontinued at the close of business on Friday, January 30, and by Monday morning had been replaced by a single dial system for handling inter-agency calls. Over the week-end, obsolescence had yielded to the engineer and his slide rule, and the old had been replaced by the new.

Our Federal Government in Washington and the District of Columbia's governmental activities are served by upwards of 100 separate telephone PBXs—private branch exchanges. These range in size from small manual or dial PBXs with perhaps 10 or 20 telephones to the huge installation that served the approximately 20,000 War Department telephones during the latter part of World War II.

These PBXs are of course supplemented by numerous individual lines, auxiliary lines, private lines, and the like; yet about 98 percent of Government telephone activity is in PBX service.

The administration of nearly all our Federal Government activity is centralized in Washington. As a result, there exists a considerable community of interest among agencies, and calls to and from other agencies are an important portion of the traffic at each PBX. This has long been so, and, together with the high con-

The heart of Washington, D. C. In the center foreground is the Capitol, while all about are Government buildings housing agencies which are now enjoying an improved telephone service

centration of Government agencies within a relatively small area of downtown Washington (the entire area of the District of Columbia is only 67 square miles), resulted in the establishment about 30 years ago of what became known as the Interdepartmental switchboard for handling calls between departments and agencies of the Government. This was a manual switchboard located in a Chesapeake and Potomac Telephone Company building and maintained and operated by C. & P. personnel.

The Interdepartmental system may be represented as a wheel, with the Interdepartmental board as the hub and with Interdepartmental lines radiating like spokes from that hub to the various Government PBXs. All large Government PBXs, and most of the smaller ones, had such lines into that board.

The operation at the board consisted of handling calls between those Government agencies having lines to the board. It was variously referred to as the Interdepartmental or Government board, since it handled calls between departments and agencies of the Government; or as the "80" board, because the operators at that switchboard were reached from Government dial telephones by dialing "80."

C. & P. revenues from this system were on the basis of a monthly charge to each agency for its lines into the switchboard, plus a charge for each call handled. There were no other charges, either for operators or for switchboard positions.

As the use of the telephone in-

creased, in step with the growth of Government, the community of interest between certain pairs of agencies increased to the point where it was found expedient and economical to provide one or more lines to connect their PBXs directly. Such lines were furnished by the C. & P. at established rates; and if the traffic between two agencies was heavy enough and the distance not too great, the inter-agency service on this basis could be more economical than either via the Interdepartmental board or via the city's regular central-office telephone service.

These direct tie-lines came into very wide use, particularly between the larger agencies, and an extensive network of criss-crossing tie-lines was built up through the years. This network was in effect superimposed on, and was supplementary to, the Interdepartmental line network. The direct tie-lines served fewer agencies than the Interdepartmental lines, but at lower cost per call.

ALL THESE considerations necessarily affected the engineering of line requirements as between the two systems, and it became the accepted practice to provide direct tie-lines to carry the base traffic among the heavy-use PBXs, while the overflow from those lines, and all traffic of the lighter users, moved over Interdepartmental lines. In fact, at dial PBXs, equipment was so wired that tie-line overflow automatically moved over Interdepartmental.

This was an excellent and practically fool-proof arrangement—in theory. But in practice it just did not work out, and the inter-agency picture resolved itself into two separate networks. This not only created certain inefficiencies, but the difficulties experienced in trying to maintain the two networks in economic balance were, let us say, numerous and perplexing. The need for a more flexible arrangement that would combine the best features of both had long been obvious.

The principal difficulty experienced with the dual system was that hundreds of calls, particularly from dial PBXs, were routed over Interdepartmental lines by dialing the universal "80" code into the Interdepartmental switchboard, rather than over the direct and more economical tie-lines provided. In spite of repeated instructions to the contrary, Government personnel at the various agencies, with both tie-lines and Interdepartmentals available, persisted in dialing "80" instead of the specific codes for particular tie-line groups, even though the Interdepartmental routing in every instance interposed an additional operator and gave generally slower service.

Another factor militating against the proper use of tie-lines was the lack of uniformity in assigning tie-line codes. For example, of those dial PBXs having tie-lines to Treasury, each one might well have assigned a different code to its Treasury lines.

Preliminary Studies Undertaken

IN 1936 the idea of a mechanical switching arrangement for handling inter-agency calls began to arouse interest in the then Procurement Division, now the Bureau of Federal Supply, of the Treasury Department.

Several preliminary studies were made in the next few years, and by

Clifton E. Mack, Director of the Bureau of Federal Supply, inaugurates the new system in the presence of John T. Kent (standing), District Commercial Manager—Government, of the Chesapeake and Potomac Telephone Company, and D. A. Kosh, Chief of the Public Utilities Division

1939 plans were under consideration to lease such a switching installation from the C. & P. Company. By that time, actually, an engineering study of that installation, including line and switch requirements and tentative code assignments, and based on the then configuration of inter-agency traffic, had been completed and was under consideration. But unsettled world conditions and then World War II combined to postpone action on the project, at least until the necessary equipment again was available.

In July of 1944, when the Public Utilities Division was established in the then Procurement Division, its engineers resumed study of the possible economies and efficiency of such an arrangement under existing conditions.

The situation in 1944 bore little resemblance to the 1939 picture, however.

Government telephone growth during the war had been incredible. For example, in 1939 a 28-position manual PBX with about 3000 stations served the combined War and Navy activities. By 1944, the War Department PBX alone had 110 positions serving 19,300 stations, and Navy had its own PBX of 62 positions serving about 11,400 stations.

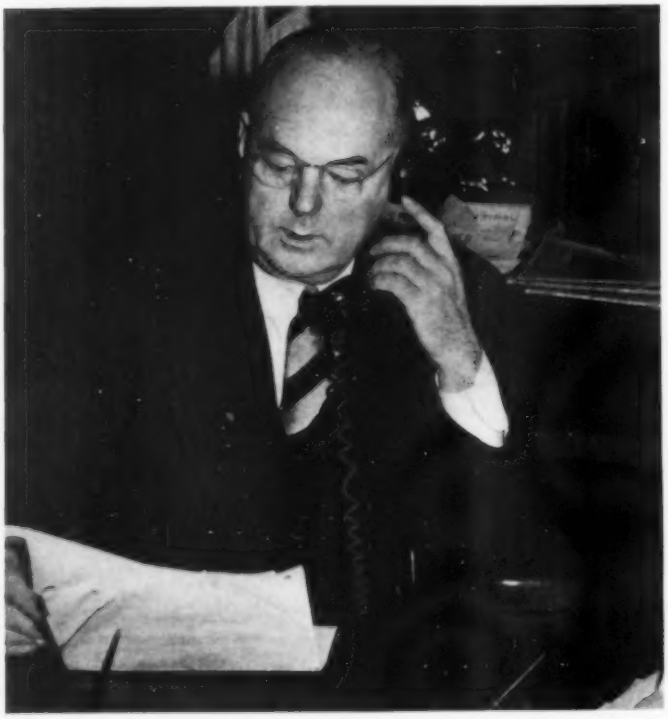
The picture had so changed, in fact, that there was strong sentiment —on the part of some people, at any rate—in favor of waiting until the

war ended and Government activity leveled off before undertaking such a project. It was ultimately decided, however, that more could be gained by proceeding immediately than by postponing the matter indefinitely, and studies continued.

Old data were obviously worthless, and it was necessary for engineers of the Public Utilities Division and of the C. & P. Company to start from scratch, obtain up-to-date traffic data, develop a complete new set of requirements, and design an entirely new installation.

The existence of the huge War and Navy PBXs introduced trunking and switching considerations that five years earlier would have been thought fantastic. Tying such PBXs, and a hundred or so others, into a well-integrated system wherein any specific agency could be reached from a telephone in any other agency by dialing a particular code, was not a simple matter. It raised many questions and problems that had to be resolved by the C. & P. and the Public Utilities Division.

By early 1946, studies had progressed to the point where it was obvious that such a system would be not only technically feasible but also economically desirable. It was therefore thought well to obtain the reaction of all Government agencies in Washington to the proposal—at least in principle. Inasmuch as the proposed system would replace both the existing direct tie-line and Interdepartmental networks, and therefore would require 100 percent participation by Government agencies, it was felt that all should be advised of developments.



The first call over the new system is received by Secretary of the Treasury Snyder, under whose jurisdiction comes the Bureau of Federal Supply

A meeting was arranged to which all agencies were requested to send representatives. The proposal was presented to them for their consideration and representatives of the Public Utilities Division and the C. & P. Company were on hand to answer questions. The reaction was unanimously favorable,

and resulted in the placing of the order for the dial switching system.

A detailed traffic study of all inter-agency traffic as of August 1946 was made by the C. & P. Company, and served as the basis of the engineering, by the A. T. & T. Company and the Bell Telephone Laboratories, of the switching system. The switching equipment for the system, which was manufactured by Western Electric, is installed on C. & P. premises.

The equipment is furnished at tariff rates. Arrangements have been made for the Public Buildings Administration to accept this billing, and to pro-rate the charges to participating agencies. It has been proposed that Public Buildings Administration request a specific appropriation from Congress to pay these charges; if granted, it would obviate the allocation of charges to each agency. The lines connecting each agency with the switching center are billed directly to the agency by the C. & P. Company in the regular monthly bills.

How the System Works

THE INTER-AGENCY dial switching system serves 108 PBXs, is designed to serve 130, and may be expanded if necessary. Of the 130, 70 of the more frequently called PBXs may be reached through three-digit codes running from 130 through 199; 60 smaller agencies use four-digit codes beginning with 1210 and running through 1269. It will be noted that all codes begin with "1." This desirable feature is possible because the first level on first selectors at all Government dial PBXs has not been used for PBX station numbers and is therefore available for this purpose.

The August 1946 study disclosed that there were 2,269 lines in the direct tie-line network and 1,336 lines in the old Interdepartmental network: a total of 3,605 lines. The traffic on these networks, according to preliminary estimates, was such that a single integrated system of 2,517 lines could carry it. Actually, a total of 2,486 lines was on the new system at the time of the cutover. This number of lines is of course, subject to modification as experience in actual operation is gained. Registers are provided for the various switch and line groups that will make it possible to keep service—and economy—at the optimum.

The largest single group of lines provided, 271, is to the former War Department PBX, which now serves National Defense. On the other hand, a small activity such as the National Mediation Board requires but one line.

In designing the switching arrangements, it was found desirable to break up large groups of lines into separate incoming and outgoing groups. Generally, if 10 or more lines are required to handle a particular agency's two-way traffic, it is more effective, and it may be just as economical, to break them up into one-way groups. The difference in cost of the tie-line terminal equipments involved in one-way versus two-way operation becomes an important factor in the economics underlying the engineering of large groups of lines.

The actual switching of the system is done with step-by-step equipment utilizing 2,854 switches. Of these, 60 are line finders, 1,520 selectors, and 1,274 connectors. The

relatively few line finders required are used only on low-calling-rate two-way lines from manual PBXs. The great majority of incoming lines are one-way and terminate in incoming selectors.

Operation of the equipment in handling a call is essentially as follows:

From a dial PBX, the calling party at the PBX station picks up his hand set, receives the dial tone, and dials the code assigned to the particular agency he is calling. The operator at the called agency answers, and connects him to the extension he desires.

From a manual PBX, the desired agency's code is not dialed until the PBX operator has connected the calling party's line to one of the lines to the switching center. When that connection has been made, he receives a dial tone, and proceeds as above.

Advantages of the System

FROM THE GOVERNMENT'S point of view, the major advantages to be gained from the new system are:

1. *Economy.* The new system replaces two less efficient systems, and the resulting savings are estimated at about $85,000 per year.

2. *Speed.* Actual checks made of calls placed at dial PBXs indicate that a total elapsed time of ten seconds or less, from the picking up of the hand-set at the calling station to the actual answering by the called party, is not unusual.

3. *Reliability.* The system should be practically free from operating interruptions of any kind.

4. *Availability.* The system is in service 24 hours a day, 7 days a week. The old Interdepartmental board was regularly on a 7 A.M. to 5:30 P.M. 5-day week schedule, with but skeleton coverage at other times.

The major advantages to the Chesapeake and Potomac Telephone Company are:

1. *Utilization.* The lines of the new system make for much better utilization of cable plant than the two networks that it replaced. Revenue from direct tie-lines is based on air-line distance between terminals, regardless of the actual routing involved. The new system will result in a larger ratio of revenue mileage to route mileage, since the location of the switching center in one of C. & P.'s downtown buildings permits tying into existing cable very efficiently.

2. *Efficiency.* More efficient dial operation replaces the old manual system. This is in line with the present program of dial conversion.

3. *Reliability.* The C. & P. also benefits from the fact that the system should be practically free from operating interruptions of any kind.

Preliminary Arrangements

TELEPHONE PEOPLE don't get very excited about cut-overs any more. Telephone plant growth is so rapid that cut-overs are every-day occurrences. This one wasn't quite in that category, for two reasons. First, this was a unique installation; there wasn't another one like it anywhere. Second, there was the whole week-end, from close of business Friday,

Operation of the switching equipment is being explained to a group of Government and telephone company officials

January 30, to opening of business Monday, February 2, in which to get the job done—an unparalleled luxury in cut-overs.

For weeks before the cut-over, the C. & P. Company's Government District office had hummed with activity, for much had to be done in the way of education. The program started with the service engineers who deal with the Government agencies. Through them the operating and supervisory personnel at Government PBXs were informed as to the details of operation under the new system.

The Bureau of Federal Supply cooperated in the educational phase by issuing circular letters with instructions and pertinent information to all agencies. These were directed to the "Heads of Departments and Establishments," and included, among other things, a recommended form for an instruction memorandum which each agency was requested to reproduce for distribution to all its personnel.

Directory information, such as the code assignments for the various agencies, was made available to such of them as desired it for use in revising their directories. To those agencies that did not desire to revise their directories at this time, the C. & P. Company furnished a supply of a specially prepared card form of directory, with the code information, for distribution to their personnel. All this planning, which was very effectively coördinated, resulted in a well-informed group of prospective users.

Interest in the new service ran

high and manifested itself in the nearly 100,000 calls placed during the first 24 hours. Some of these were undoubtedly curiosity calls: a healthy thing—within limits—in an installation of this kind, and certainly to be expected. But it was not expected that the volume would be maintained at this high level. However, the record of calls over the system during the three weeks immediately following the cut-over indicates a normal business-day average of 92,400 calls, with a maximum of 107,400 and a minimum of 87,900. This looks a good deal like enthusiastic response of Government personnel to the excellence of the service being provided.

This general acceptance of the new system is very gratifying to both the Government and the Chesapeake & Potomac Telephone Company. Such reaction as has been voiced is also uniformly favorable. Very little objection of any kind has been heard, and such difficulties as have been experienced were of little importance.

Although the fundamental soundness of the project was well established as a result of studies undertaken by Government engineers, smoothness, speed, economy, and efficiency of operation which the system exemplifies is believed to be but the reflection of the quality of Bell System personnel—in the A. T. & T. Company, C. & P. Company, Bell Laboratories, Western Electric—that made it possible.

The C. & P. Company has been most involved, and any attempt to mention, by name, all those of the C. & P. who shared in this effort would be practically a roll call of the local group. The entire C. & P. organization is to be particularly commended for its part in bringing an idea to life.

Continued close and harmonious coöperation between that organization and the Bureau of Federal Supply can only result in the best possible telephone service for our Federal Government—an objective which the Chesapeake & Potomac Telephone Company and the Public Utilities Division have in common.

. . . all business in a democratic country begins with public permission and exists by public approval. If that be true, it follows that business should be cheerfully willing to tell the public what its policies are, what it is doing, and what it hopes to do. This seems practically a duty. It is not an easy duty to perform, for people who make up the public are generally busy about their own affairs and are not particularly prone to take time off to hear about the telephone business or any other. On the other hand, I think it clear enough that the public would very much resent it if a business now took the attitude which many used to take, "We'll tell you nothing. It is none of your affair." The Bell System endeavors to tell the public about its affairs in a number of different ways.

From "The Bell Telephone System," by Arthur W. Page, Vice President, A. T. & T. Co. Harper & Brothers, publishers, 1941.

"Opinion Surveys" among A. T. & T. Stockholders Helped In the Development of One Document Combining "Full" And "Fractional" Warrants and an Order Form

The Single Warrant: A Step Ahead in Corporate Finance

Frederick A. Wiseman

IN THE PAST 20 years the American Telephone and Telegraph Company has made four offers to stockholders of convertible debentures totaling *more than one billion dollars.*

These debentures, which are evidence of corporate debt, are labeled "convertible" because under certain conditions they may be converted into shares of A. T. & T. capital stock—which are certificates of ownership of the company. Because they carry this privilege of conversion, the law requires that such debentures must be offered *first* to existing A. T. & T. stockholders for purchase.

The offer to stockholders is made, and their right to purchase is represented, by warrants which are sent to them through the mails. There are a great many A. T. & T. stockholders: more than 723,000 at the end of last year. In connection with all four debenture offers, about 3,750,000 warrants have been issued.

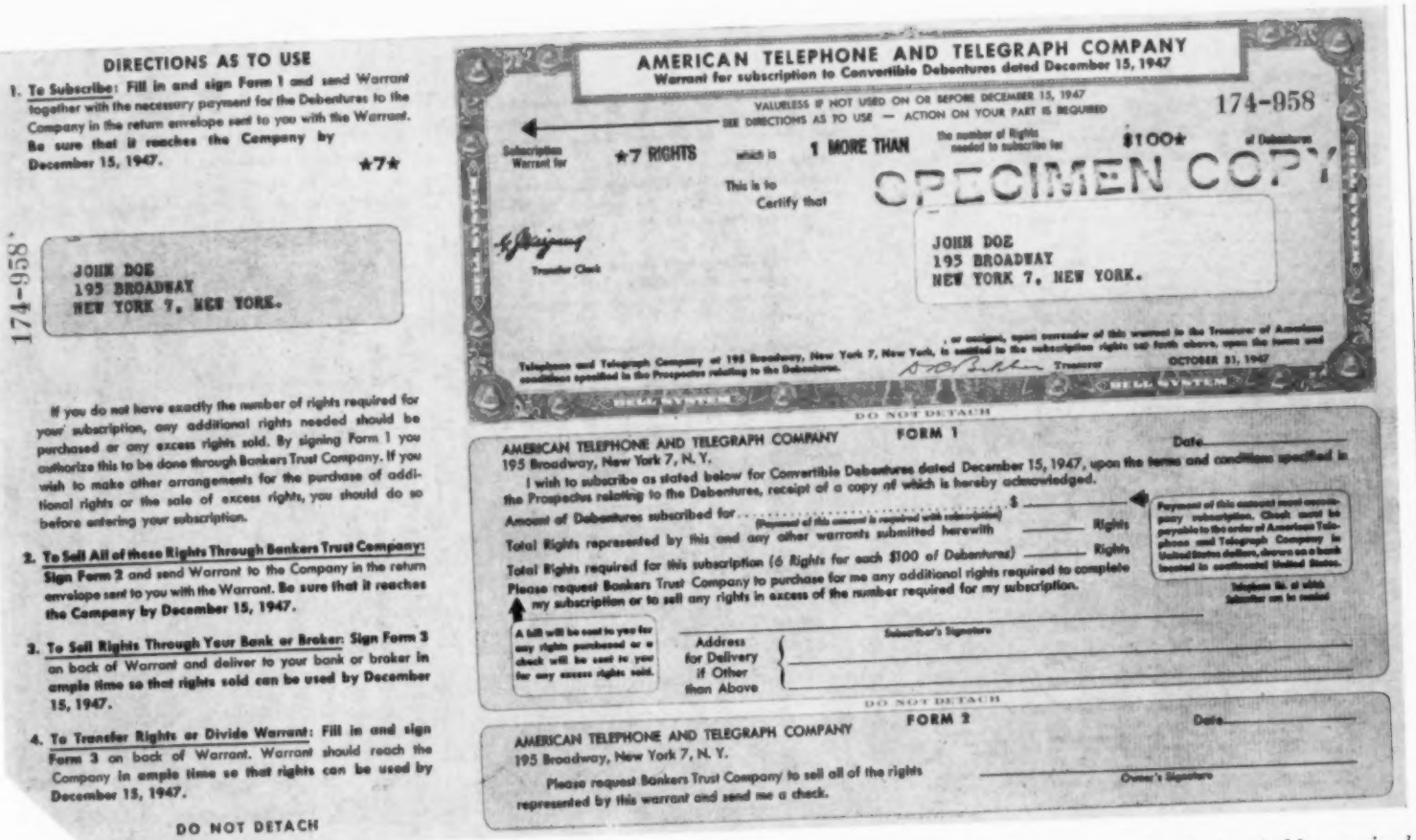
Warrants, since they are concerned with an investment matter, are necessarily phrased in the rather formal and—to some people, at any rate—unfamiliar language of financial transactions. Also, they present to each A. T. & T. stockholder the necessity of deciding what course, among several alternatives, he or she should pursue.

All this has added up, in the past, to a vast amount of routine work for the A. T. & T. Treasury Department, and to a good bit of confusion among many stockholders, making things difficult for both parties.

Last year, with a $357,000,000 convertible debenture issue * in sight, the Treasury Department set out to see what could be done to simplify the whole transaction.

This is an account of what was achieved in connection with that issue, and the way in which it was brought about.

* See "The Biggest Offer Ever," MAGAZINE Winter 1947–48.



DIRECTIONS AS TO USE

1. **To Subscribe:** Fill in and sign Form 1 and send Warrant together with the necessary payment for the Debentures to the Company in the return envelope sent to you with the Warrant. Be sure that it reaches the Company by December 15, 1947. ★7★

174-958

JOHN DOE
195 BROADWAY
NEW YORK 7, NEW YORK.

If you do not have exactly the number of rights required for your subscription, any additional rights needed should be purchased or any excess rights sold. By signing Form 1 you authorize this to be done through Bankers Trust Company. If you wish to make other arrangements for the purchase of additional rights or the sale of excess rights, you should do so before entering your subscription.

2. **To Sell All of these Rights Through Bankers Trust Company:** Sign Form 2 and send Warrant to the Company in the return envelope sent to you with the Warrant. Be sure that it reaches the Company by December 15, 1947.

3. **To Sell Rights Through Your Bank or Broker:** Sign Form 3 on back of Warrant and deliver to your bank or broker in ample time so that rights sold can be used by December 15, 1947.

4. **To Transfer Rights or Divide Warrant:** Fill in and sign Form 3 on back of Warrant. Warrant should reach the Company in ample time so that rights can be used by December 15, 1947.

DO NOT DETACH

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
Warrant for subscription to Convertible Debentures dated December 15, 1947

VALUELESS IF NOT USED ON OR BEFORE DECEMBER 15, 1947
SEE DIRECTIONS AS TO USE — ACTION ON YOUR PART IS REQUIRED

174-958

Subscription Warrant for ★7 RIGHTS which is 1 MORE THAN the number of Rights needed to subscribe for $100★ of Debentures

This is to Certify that SPECIMEN COPY

JOHN DOE
195 BROADWAY
NEW YORK 7, NEW YORK.

Transfer Clerk

, or assigns, upon surrender of this warrant to the Treasurer of American Telephone and Telegraph Company at 195 Broadway, New York 7, New York, is entitled to the subscription rights set forth above, upon the terms and conditions specified in the Prospectus relating to the Debentures.

Treasurer OCTOBER 31, 1947

BELL SYSTEM

DO NOT DETACH

AMERICAN TELEPHONE AND TELEGRAPH COMPANY FORM 1
195 Broadway, New York 7, N. Y.

Date

I wish to subscribe as stated below for Convertible Debentures dated December 15, 1947, upon the terms and conditions specified in the Prospectus relating to the Debentures, receipt of a copy of which is hereby acknowledged.

Amount of Debentures subscribed for ..... (Payment of this amount is required with subscription) $

Total Rights represented by this and any other warrants submitted herewith _____ Rights

Total Rights required for this subscription (6 Rights for each $100 of Debentures) _____ Rights

Please request Bankers Trust Company to purchase for me any additional rights required to complete my subscription or to sell any rights in excess of the number required for my subscription.

Payment of this amount must accompany subscription. Check must be payable to the order of American Telephone and Telegraph Company in United States dollars, drawn on a bank located in continental United States.

Telephone No. at which subscriber can be reached

A bill will be sent to you for any rights purchased or a check will be sent to you for any excess rights sold.

Subscriber's Signature

Address for Delivery if Other than Above

DO NOT DETACH

AMERICAN TELEPHONE AND TELEGRAPH COMPANY FORM 2
195 Broadway, New York 7, N. Y.

Date

Please request Bankers Trust Company to sell all of the rights represented by this warrant and send me a check.

Owner's Signature

A 1947 "single" warrant, which replaced the separate "full" and "fractional" warrants of earlier issues. Each stockholder received but the one warrant for the number of rights corresponding to his shareholdings. The "Directions as to Use" at the left eliminates the need for a separate order form for giving instructions to the company; it contains 225 printed words, as compared with 940 on the order form previously used

Key to the Situation: The Warrant

THE KEY to the situation was the warrant itself: what it *did*, what it *required*, what it *said*, *how* it said it.

What the warrant *must do*, in terms of the 1947 debenture issue, was to convey to every stockholder the right to subscribe for debentures in the ratio of $100 of debentures for every six shares of stock held. For stockholders whose numbers of shares were in even multiples of six, that was easy: for each multiple-of-six shares, the right to subscribe to an equal multiple-of-$100 in debentures. It was the fractions—the holdings of less than six shares, and of numbers of shares not evenly divisible by six—which complicated matters.

What the warrant *would require* of every stockholder was, first, a decision as to what to do about his rights to subscribe to the debentures and, second, a course of action to make that decision effective. Depending on what he wanted to do and on the number of shares of stock held, a stockholder might decide to subscribe to debentures, to sell his rights, to buy debentures and sell excess rights, to buy more rights in order to purchase more debentures, or to transfer some or all of his rights to somebody else; and then he had to instruct the A. T. & T. Company to execute his wishes.

What the warrant *must say* was, of course, in explanation of what was required and by way of instruction in how to do it.

How the warrant would say it—whether clearly, simply, logically, or otherwise—would determine how easily the stockholders would understand the entire transaction and, in consequence, carry through correctly and with a minimum of error, confusion, and avoidable correspondence.

To appreciate how radical was the 1947 simplification, we must go back a couple of decades and look into the customary practice.

And the customary practice had long been, we find, for an issue like the 1947 offer, to send to each stockholder: 1), a "full" warrant, representing the right to subscribe to $100 of debentures for every six shares he held; 2), a "fractional" warrant, representing his additional but less than six A. T. & T. shares and insufficient in themselves for the purchase of a $100 debenture; and, 3), an order blank instructing the company what disposition the stockholder chose to make of his full warrant and fractional warrant (if any) and of his privilege of acquiring the debentures. All three separate documents were mailed to stockholders with a covering letter from the president.

It was customary also to have the "fractional" warrant read "1/6 of $100 of debentures," "2/6 of $100 of debentures," and so on up to "5/6 of $100 of debentures." Great pains then had to be taken to explain that a subscription could not be made for a "fractional" debenture.

IN THE 1941 convertible debenture offer, this source of confusion was eliminated when the "fractional" warrant indicated simply the number of "rights" it represented. The necessary explanation was made, of course, that the fractional warrant must be combined with another warrant for additional rights when sub-

Must Be Combined with 4 Additional Rights when Subscribing.

No.

FRACTIONAL WARRANT FOR 2/6 OF $100 OF BONDS IT REPRESENTS 2 RIGHTS

RIGHT TO SUBSCRIBE EXPIRES JULY 1, 1929.

00000

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

This is to Certify that

Fractional Subscription Warrant for Two-Year Convertible 4½% Gold Debenture Bonds

Dated May 10, 1929.

SPECIMEN

BOND SUBSCRIPTION AGREEMENT

AMERICAN TELEPHONE AND TELEGRAPH COMPANY:

195 BROADWAY, NEW YORK, N. Y.

PAYMENT MUST ACCOMPANY THIS SUBSCRIPTION AGREEMENT

Do not execute this Subscription Agreement if you wish to assign this warrant.

Subscriber's Signature

Telephone No.

Subscriber's Address for Delivery of Bonds

Street and Number

City or Town State

PLEASE DO NOT WRITE IN THE SPACE BELOW. RESERVED FOR USE OF COMPANY.

Date	Deposit Receipt No.	Amount Paid	Payment Reference	Rights Warrant No.	Principal Amount of Bonds	Supporting Warrants

Accepted by Verified by Bond Numbers SPECIMEN

Remarks

SPECIMEN

A 1929 "fractional" warrant. The conventional "2/6 of $100 of bonds" in the upper right corner confused many stockholders and caused much correspondence

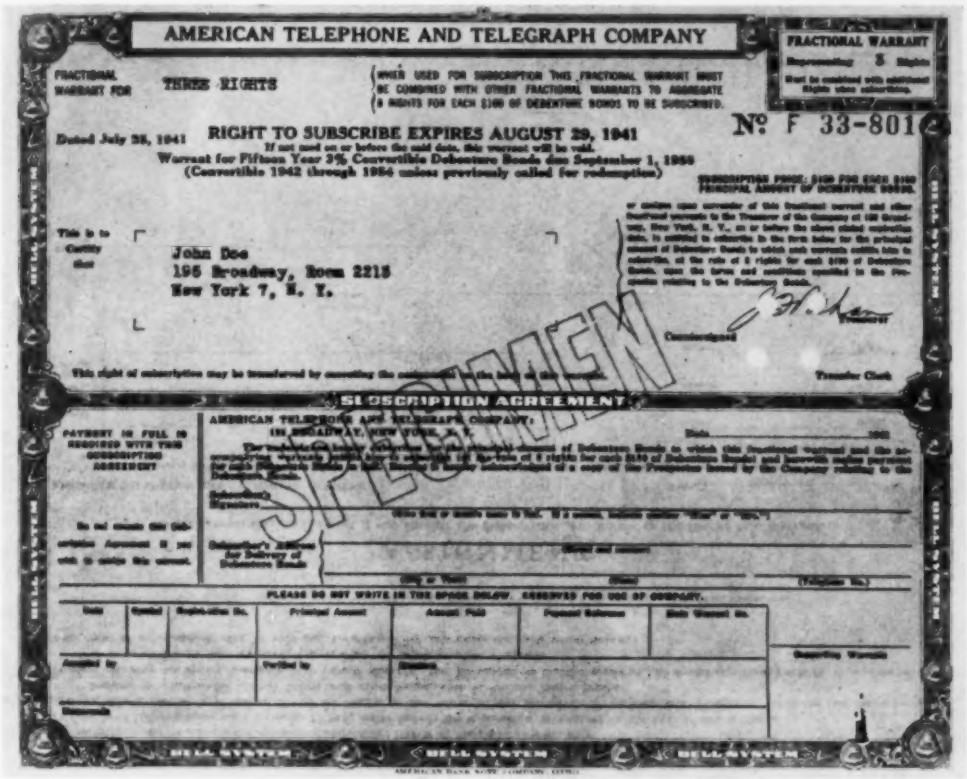
scribing for debentures. This step toward clarifying the "fractional" warrant has been referred to by brokers as perhaps the most important improvement in the form of the warrant up to that time.

The process of clarification was continued with the 1946 offer of convertible debentures. "Fractional" and "full" warrants were used; but where a stockholder received both, they were attached, and were folded back to back to facilitate mailing. This had the advantage of keeping the two kinds of warrants from becoming separated and perhaps lost; but so many stockholders failed to unfold and examine the documents, and wrote to the company about supposedly missing "rights," as to necessitate a printed letter of explanation. And "full" warrant, "fractional" warrant, and order blank still totaled three formal documents to be executed and returned to the company.

THAT BRINGS US up to 1947. And the 1947 convertible debenture issue would be the biggest ever.

How could the warrant, the keystone to the structure of the stockholder relationship, be further simplified.

Boldly the proposal was made to


AMERICAN TELEPHONE AND TELEGRAPH COMPANY

FRACTIONAL WARRANT

FRACTIONAL WARRANT FOR THREE RIGHTS

WHEN USED FOR SUBSCRIPTION THIS FRACTIONAL WARRANT MUST BE COMBINED WITH OTHER FRACTIONAL WARRANTS TO AGGREGATE 8 RIGHTS FOR EACH $100 OF DEBENTURE BONDS TO BE SUBSCRIBED.

Dated July 28, 1941 RIGHT TO SUBSCRIBE EXPIRES AUGUST 29, 1941

If not used on or before the said date, this warrant will be void.

Warrant for Fifteen Year 3% Convertible Debenture Bonds due September 1, 1956

(Convertible 1942 through 1956 unless previously called for redemption)

No. F 33-801

This is to Certify that John Doe 195 Broadway, Room 2215 New York 7, N. Y.

Countersigned

Transfer Clerk

SUBSCRIPTION AGREEMENT

PAYMENT IN FULL IS REQUIRED WITH THIS SUBSCRIPTION AGREEMENT

Do not remove this Subscription Agreement if you wish to retain this warrant.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY,
195 BROADWAY, NEW YORK, N. Y.

Date

Subscriber's Signature

Subscriber's Address for Delivery of Debenture Bonds

(City or Town) (State) (Telephone No.)

PLEASE DO NOT WRITE IN THE SPACE BELOW RESERVED FOR USE OF COMPANY.

Date | Symbol | Registration No. | Principal Amount | Amount Paid | Payment Reference | Date Warrant No.

Accepted by | Verified by | Entered

Remarks

Subscribing Warrants

SPECIMEN

BELL SYSTEM BELL SYSTEM BELL SYSTEM

A 1941 "fractional" warrant. The wording at the top and the method of showing the number of rights are considered to be the most important change prior to 1947

combine "full" and "fractional" warrants and the customary order form in *one* warrant instead of three separate documents, and to explain in simple and informal terms what it was all about.

But it had never been done!

Was that of itself any reason why it could not or should not be done?

With more than 700,000 stockholders, should A. T. & T. experiment—or leave that to some other company with relatively few stockholders?

Nobody had the answers to those basic questions. But we thought we knew the way to obtain them. How?

Well, it's the stockholders who would be most affected. So we decided to ask them.

Seeking Stockholders' Opinions

THERE IS in the Chief Statistician's Division of the A. T. & T. Company a group which is expert in conducting opinion surveys—studies of "customer attitude." * And many of the principles and techniques which apply to studies carried out among customers can apply equally well to studies carried out among stockholders.

* See "Finding Out What People Think of Us," MAGAZINE Spring 1946.

Those specialists were asked to find out how stockholders might be expected to feel about the new "single" warrant. They undertook, on a "sampling" basis, to get information about the new single warrant on these three points:

1, whether stockholders would know how to proceed with it, assuming that they wanted, A), to sell all or part of their rights; B), to use all or part of their rights to subscribe to debentures; or, C), to assign all or part of their rights to others.

2, which parts of the warrant and the related instructions stockholders would have difficulty in understanding.

3, what suggestions for improvements could be obtained.

First, sample specimens of the proposed new warrant were devised and, after an almost infinite number of revisions, were printed.

Then, through experimental interviewing, a series of questions and an outline for the interview procedure were created. It was found, incidentally, that each interview would consume no less than three-quarters of an hour if thorough coverage was to be obtained.

Finally, it was decided to conduct extensive interviews with about 200 stockholders.

But, by the time 100 interviews had been completed, it was evident that so definite a pattern had been set that the results thus far obtained could be accepted as reasonably representative of stockholder reaction.

What was the pattern?

Briefly, *the stockholders favored the new form of warrant by seven to one.* Only seven percent expressed no preference.

But the interviews also made it clear that there was room for improvement in the arrangement of the single form and the information it contained, and in the wording. Some stockholders not only had difficulties with the financial terms—warrant, rights, debenture, and the like—but were not sure what was meant by such words as void, pending, aggregate, assign, remittance, and similar expressions.

The interviews also had their amusing points.

One stockholder, of foreign extraction, when asked what he would do if he had 15 rights and wished to use 12 rights in subscription and sell the other three, responded: "I ask the man at the counter."

The interviewer suggested that he might be at home so that it would not be convenient to do that.

The reply was: "I wait until I come downtown and then ask the man at the counter."

"Suppose you were ill and would not be able to come to the counter?"

"I send someone to ask the man at the counter."

Another stockholder responded, tongue in cheek, to the printed question, "Disposition of warrants?" on a form, that his warrants should be "kind and gentle."

Stockholder Reactions

THE STUDY emphasized the need for further simplification of the warrant, and of the transmittal letter mailed to stockholders with the warrants. It showed that improvement could also be made in the printing style as well as in the arrangement

In the foreground is the Communications Bureau which in 1929 handled correspondence with stockholders. In relation to the number of stockholders, the number of cases requiring correspondence was more than twice the 1947 volume

and location of the printed matter. In short, improvement in every phase of the warrant and related material would help to reduce the stockholders' confusion with respect to the action required of them upon receipt of their warrants.

The study of stockholder reactions supplemented the knowledge gained through past experience about difficulties stockholders have in grasping the significance and purpose, as well as the uses which may be made, of their warrants. This was of material value in the final determination of what form of warrant should be used. The next step was to review the subject with the lawyers. Instead of complicating the warrant form, the lawyers contributed much to the further simplification of it.

As finally corrected and revised, the new single warrant presented in one piece of paper what had before been contained for most stockholders in three pieces of paper. (Two warrants, a "full' and "fractional," and an order form for the stockholder to use in giving instructions as to the use of his rights.)

The amount of printed material on the new warrant contained fewer than half the printed words which had before appeared on the three pieces. The words used were easier for most people to understand, and the style of type used was easier to read.

The language was as simple and understandable as it could be made and the left hand portion was given over to simple and concise directions regarding the value and use of rights.

The stockholders liked the warrant they received in 1947, and frequently said so. For those who did not express their opinion, the record speaks. Fewer letters, fewer telephone calls, fewer people who had to take the time and trouble to come to the office.

The new single warrant, plus other changes and improvements associated with it, brought forth marked differences in operating results between the 1946 and 1947 convertible debenture issues.

The 1947 Convertible Debenture Issue was $357,532,600 and was four percent larger than the 1946 issue.

The number of warrants issued in 1947 was one-third fewer.

Important Results

CASES requiring correspondence or telephone communications with the stockholders were appreciably fewer. Cases where the stockholders came to the office because they wanted to ask questions and get direct answers were 15 percent fewer in 1947. Telephone inquiries from stockholders who needed some explanation of their transactions were 28 percent fewer.

There were nearly 6,000 more subscribers in 1947 and the amount of the offer unsubscribed was less than in 1946. But the total hours worked by the temporary security issue organization of 700 people were nine percent fewer in 1947. Total overtime hours worked by the organization were 60 percent fewer in 1947. This all means, of course, that the new single warrant and the changes associated with it made things easier for the stockholders and at the same time the company's work of processing their transactions was less than it had been previously. The results, of course, also reflect other factors; but underlying them all was the new form of warrant.

Stockholders found on their 1947 warrant instructions as to its use in concise, easy-to-read language. The left end of the warrant containing these instructions also served another practical and useful purpose. As the warrants were returned to the company with the stockholders' directions for subscription, sale of rights, or transfer, the left end was cut off, stamped with date and reference number, and filed. The main section of the warrant then proceeded through a series of routine operations. By promptly establishing a reference file of warrants used in subscription, sale, or transfer, a major problem that had plagued the organization in preceding issues was practically eliminated.

This up-to-date file made it possible to locate cases in process when stockholders anxious to know about their transactions wrote or telephoned. Frequently stockholders will make inquiry regarding a transaction or ask that it be changed shortly after mailing their warrants to the company. This had been a difficult problem to cope with in the past because of the tens of thousands of transactions in process at all times during the subscription period.

THE NEW WARRANT was an important factor in bringing about the better results in most operations for the 1947 convertible debenture issue. It was not a cure-all, however, in making matters easier for the stockholders. One obvious disadvantage of the single warrant was the fact that when a stockholder wanted to dispose of excess rights (previously represented by a fractional warrant) it was necessary to send the warrant to the company to be divided into

two warrants, unless the stockholder wished to arrange for the sale of the excess rights through the company. For a few this proved to be an inconvenience.

The number of cases requiring correspondence in 1947 was equal to about five percent of the number of stockholders. More than 100 employees were needed in the Communications Division to handle the work. 'Way back in 1929, before much progress had been made in the improvement of warrant forms, there was nearly twice the amount of correspondence in relation to the number of stockholders as there was in 1947. A larger number of employees was required in 1929 to handle the same number of cases.

The information which the study of stockholder reactions made available showed that a great deal could be done to eliminate sources of confusion and misunderstanding. There is a point, however, beyond which it is not possible to go.

Technical Requirements

AN OFFER of securities to stockholders for subscription must be in accord with the Securities Act. If the securities are to be listed on an "Exchange," the provisions of the Securities and Exchange Act also apply. The rules and regulations issued by the Securities and Exchange Commission must also be complied with.

In a broad sense, all must be in accord with accepted general corporate practice. There can be no violation or conflict with laws governing the acts of corporations.

Furthermore, the New York Stock

Warrants for the 1941 and previous issues were numbered and signed simultaneously on the printing presses after they had been prepared for each stockholder. This provided an alphabetical numerical sequence, whether a stockholder received one warrant or two

The machines shown here, regularly used for filling in amounts and signing dividend checks, were used on pre-numbered warrants last fall to fill in the number of rights and sign them at the same time

Exchange and other exchanges on which A. T. & T. securities are listed have rules and regulations designed to protect the investing public as well as to insure uniform action by the membership of the exchange. Any issue of securities must conform to such regulations and customs.

There are many considerations in the development of a new form of warrant. In addition to the effect on the company, the stockholders, and the agent appointed for the stockholders in the purchase and sale of rights, another very important matter is the effect on the work of brokers who handle transactions in the purchase and sale of rights or arrange subscriptions for their clients. About three-quarters of the stockholders receiving rights for subscription to a convertible debenture issue sell the rights to others who use them in subscription. Practically all of these sales pass through brokerage channels. Because of the interest brokerage firms would have in any change in the form of warrant, a series of conferences was arranged in the fall of 1947 with representatives of the Association of Stock Exchange Firms.

THE APPROACH in these conferences was the same as it had been with respect to the stockholders' interests. Basically whatever arrangement proved best for the brokers would in the long run also be best for the company. With this as the starting point and holding to the view that the principal objectives were to insure that the company's stockholders would receive value for their rights and that the new issue of debentures would be a success, a number of matters were concluded of mutual benefit to the brokers and to the company.

The principal simplification agreed upon with the Association of Stock

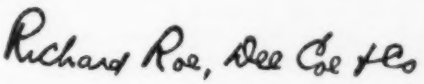
Exchange Firms provided for the filing with the company of certain forms of agreement of indemnification and for the use, where desired, of printed facsimile signatures in place of a handwritten official signature. While experience has demonstrated the need for rigid requirements in the transfer of ownership of stock, it is evident that somewhat more liberal treatment can be applied in the case of rights which are of limited value and which expire in a relatively short time.

The arrangements agreed upon with the stock exchange firms simplified their work tremendously, while introducing no adverse factors, and met with general approval among financial firms. The number of warrants cancelled and re-issued by reason of transfers in 1947 was down 75 percent compared with 1946.

The procedures developed from the discussions with the Association of Stock Exchange Firms have recently been adopted by the Gulf Oil Company for its new issue of stock and have also been adopted by the Pacific Gas and Electric Company. The latter company also used the single warrant form.

The material distributed to brokers describing the use of printed facsimile signatures called for illustrations showing the circumstances and conditions under which such signatures would be accepted. This suggested the need of a representative type of broker's signature. Ordinarily the name John Doe is used as an anonymous person. This hardly seemed appropriate as the name of a brokerage firm because, like lawyers, brokers usually have a composite of many names in their firm. In fact, one of the very large brokerage firms has such a long name and so many partners that it is commonly referred to as "We the People."

In place of John Doe the name Richard Roe, Dee Coe & Co., written as shown below, was adopted as the illustration of an official signature.



This illustration of a broker's official signature appears in the material used for both the Gulf Oil Company and the Pacific Gas and Electric Company issues. Perhaps it may become the John Doe of brokerage firms.

THE WARRANT used by the A. T. & T. Company in the 1947 issue represented another step in the continuing process of improvement. Many important changes have been made as warrants have been issued from time to time over the years and no doubt changes will be made in the future. This is normal progress, and it is in keeping with the constant endeavor in the telephone industry to find better ways of doing its job.

Twenty-five Years Ago in the

BELL TELEPHONE QUARTERLY

Items from Volume II, Number 2, April 1923

Transatlantic Radio Telephone Experiments

NEW HONORS in the field of telephone research were achieved by Bell System engineers when, on the night of January 14, executives of the American Telephone and Telegraph Company talked from the United States to England by radio telephone.

Sitting in his office on the twenty-sixth floor of the Telephone and Telegraph Building, 195 Broadway, New York, H. B. Thayer, president of the company, spoke into a telephone words which were carried over cables and open telephone wires to Rocky Point, L. I., transmitted through the ether, and plainly and distinctly heard by a group of scientists and newspaper representatives assembled at New Southgate, a suburb of London.*

The Rocky Point sending station is owned by the Radio Corporation of America. The radio apparatus and system used was made possible by coöperation between this company and the American Telephone and Telegraph Company and is the result of research and experimental work in the laboratories of American Telephone and Telegraph Company and the laboratories of the Radio Corporation of America and its associated companies.

Transatlantic radio telephony is not new. In 1915 Bell System engineers succeeded in sending the human voice by radio telephone from Arlington, Va., to Paris. The experiment of January 14, however, differed from that of eight years before in that it was carried out along lines definitely prearranged, the program extending over a period of exactly two hours. Whereas, in the experiments of 1915, a few words and sentences were intelligible, in the later test thousands of words were transmitted and received in England so clearly and distinctly that the intonations of the speakers were recognized by their friends and acquaintances. . . .

The transmission of actual messages was preceded by several weeks of experimentation in which isolated words were used for test purposes. In the course of these preliminary tests a mass of data in regard to the transmission characteristics of the ether was obtained. It is believed that these records will be of considerable value in the research work being carried on by Bell System engineers.

* See "'Hello England': A One-way Transatlantic Talk," MAGAZINE Winter 1946–47.

Joint A.I.E.E. Meeting By Wire and Loudspeaker

ONE OF THE ATTRACTIONS on the program of the mid-winter convention of the American Institute of Electrical Engineers was a joint meeting between 1000 members assembled in New York and 500 members assembled in Chicago. The meeting was held on the evening of February 14th, President F. B. Jewett presiding from New York. The two assemblies were united as though in a single auditorium through the agency of the Western Electric Company's public address system associated with the long distance telephone lines of the American Telephone and Telegraph Company, in such manner as to give two-way loudspeaker operation. By means of this installation, papers which were read in New York were heard simultaneously by the audience in Chicago and papers read in Chicago were also heard at New York. . . .

At each auditorium the only apparatus visible was a small but very sensitive transmitter, which stood on the speaker's desk, and a group of small horns suspended above, from which the amplified voices were emitted. In addition to the visible apparatus, powerful vacuum tube amplifiers were used to magnify the speaker's words. Sets of these amplifiers as well as the transmitters and horns were located at both New York and Chicago. The long distance wire telephone circuit joining the two audiences carried special equipment so as to deliver the speakers' voices at either end with a minimum of distortion.

A special telephone circuit also carried the speakers' voices to the radio station WEAF in New York, from which they were broadcast to many thousands of listeners who were not in attendance at either auditorium.

Second Transcontinental Route Planned

PLANS are nearing completion for work which will make available a second transcontinental route. The construction work which it is expected to complete this year involves pole line work, wire and equipment installations from Denver via El Paso to Los Angeles.

Transcontinental telephone service was first made available to the public in January, 1915. Prior to that time, two routes, both carrying long haul circuits, had been extended as far West as Denver. The extension of this service to the Pacific Coast involved the construction of many miles of new pole line, the stringing of four 165 (No. 8 B.W.G.) wires between Denver and San Francisco, extensive rearrangements of the existing circuits east of Denver, and the installation of telephone repeaters and associated equipment at suitable points between New York and San Francisco. High quality telephone service has been furnished over these circuits since their completion, various improvements having been made from time to time as the art advanced. . . .

After carefully considering all of the factors involved, it has been decided that the service as a whole can be best safeguarded by providing the additional facilities now required on a second route, and arrangements are under way to make four 165 gauge wires available from Denver to Los Angeles via El Paso. The carrying out of this plan will make available two separate routes carrying long haul circuits from the Pacific Coast to points east of Denver, two such routes having been available east of Denver since transcontinental service was started. As the new route is largely through a section of country where few severe storms are experienced, a high degree of protection to this very important service will be furnished. In addition, the circuits to be provided on the new route will more satisfactorily handle the rapidly increasing requirements for through service between Los Angeles and other southern California points and the East.

The provision of facilities along this route is in line with the plans for permanent extensions of the trunk lines for nation-wide service which contemplated the provision of at least three main transcontinental routes with suitable North and South tie lines. One of the two new routes planned will extend from New Orleans and Dallas via El Paso to Los Angeles, and the other from Minneapolis via Fargo and Billings to Seattle. The work being undertaken this year fits in with the plans for the Southern Route.

The Goose That Lays the Golden Egg

From an order issued January 29, 1948, by the North Carolina Utilities Commission, authorizing a second increase in rates for the Southern Bell Telephone and Telegraph Company in that State.

IT MUST BE kept in mind that telephone service is different from that rendered by any other utility in that all parts of the country are interconnected. People in this State talk to people in other states; people in other states talk to people in this State; and if the service in any state through which their conversation is transmitted is poor, the whole service is poor, just as no chain can be stronger than its weakest link.

In North Carolina the expansion program for this year calls for the expenditure of $15,081,000. This fund contemplates the building of additions to outside plants, new buildings and land, central office equipment, pole lines, installation of stations, and additional toll circuits. Thirty-five thousand applications for service were pending on January 1, 1948.

The people of North Carolina are clamoring for this needed expansion, and this Commission is anxious to see it carried out, believing that the increased facilities would add millions of dollars of profits to the business and other interests of North Carolina, while the crippling of the proposed expansion program would no doubt mean the loss of millions of dollars to the people of the state.

In view of the water-logged situation presented above, this Commission is anxiously willing to coöperate with every state involved in any effort to provide rates which will assure the company a fair profit. A contrary course, in the opinion of the Commission, would be like killing the goose that lays the golden egg, for it is obvious to even the novice that unless the company is put in a position to give good service and provide the necessary expansion, the result would be disastrous, not only to the company but to the public as well.

Indexes Now Available

AN INDEX to Volume XXVI (1947) of the BELL TELEPHONE MAGAZINE may be obtained without charge upon request to the Information Department of the American Telephone and Telegraph Company, 195 Broadway, New York 7, N. Y.

A twenty-five year cumulative index, covering Volumes I through XXV of the BELL TELEPHONE MAGAZINE and its predecessor, the BELL TELEPHONE QUARTERLY, may be obtained without charge, by those maintaining a file of the publication, upon request to the same address.

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AND ASSOCIATED COMPANIES